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JOURNAL OF THE TRANSACTIONS
OF
THE VICTORIA INSTITUTE.
—
VOL. V.

JOURNAL OF
THE TRANSACTIONS
OF
The Victoria Institute,
OR
Philosophical Society of Great Britain.

EDITED BY THE HONORARY SECRETARY.

Capt. F. W. H. Petrie
Zref

VOL. V.



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Objects of the Victoria Institute.

- First.—To investigate fully and impartially the most important questions of Philosophy and Science, but more especially those that bear upon the great truths revealed in Holy Scripture, with the view of reconciling any apparent discrepancies between Christianity and Science.
- Second.—To associate together men of Science and authors who have already been engaged in such investigations, and all others who may be interested in them, in order to strengthen their efforts by association; and by bringing together the results of such labours, after full discussion, in the printed Transactions of an Institution, to give greater force and influence to proofs and arguments which might be little known or even disregarded if put forward merely by individuals.
- Third.—To consider the mutual bearings of the various scientific conclusions arrived at in the several distinct branches into which Science is now divided, in order to get rid of contradictions and conflicting hypotheses, and thus promote the real advancement of true Science; and to examine and discuss all supposed scientific results with reference to final causes, and the more comprehensive and fundamental principles of Philosophy proper, based upon faith in the existence of one Eternal God, who in His wisdom created all things very good.
- Fourth.—To publish Papers read before the Société in furtherance of the above objects, along with full reports of the discussions thereon, in the form of a Journal, or as the Transactions of the Institute.
- Fifth.—When subjects have been fully discussed, to make the results known by means of Lectures of a more popular kind; and to publish such Lectures.
- Sixth.—To publish English translations of important foreign works of real scientific and philosophical value, especially those bearing upon the relation between the Scriptures and Science; and to co-operate with other philosophical societies at home and abroad, which are now or may hereafter be formed, in the interest of Scriptural truth and of real science, and generally in furtherance of the objects of this Society.
- Seventh.—To found a Library and Reading Rooms for the use of the Members of the Institute, combining the principal advantages of a Literary Club.

Terms of Membership, &c.

The Objects of the Victoria Institute being of the highest importance both to Science and Religion, while they are such as have not been attempted to be attained by any previously existing scientific society, it is anticipated that when its establishment is known, it will receive the most liberal support by gifts and donations from friends, and be joined by large numbers of Members and Associates.

The annual subscription for Members is Two Guineas each ; with One Guinea Entrance Donation.

The annual subscription for Associates is One Guinea each, without Entrance Fee.

Life Members to pay Twenty Guineas, and Life Associates, to pay Ten Guineas, respectively, in lieu of the above Annual Subscriptions.

Vice-Patrons (ladies or gentlemen) to pay not less than Sixty Guineas each, as a Donation to the funds of the Institute.

* * All who join the Society as *Members* must be professedly Christians.

Further particulars will be furnished upon application to the Honorary Secretary, at the Office, 8, Adelphi Terrace, Strand, London, W.C.

* * All Applications for admission and general correspondence (as to papers proposed to be read, &c.) should be addressed to the Honorary Secretary of the Institute, and all Remittances of Donations or Subscriptions to the Honorary Treasurer, at the Office, 8, Adelphi Terrace, Strand, London, W.C.

Cheques to be crossed to Messrs. Ransom, Bouverie, & Co., Bankers, 1, Pall Mall East, London, S.W.

* * ALL ANNUAL SUBSCRIPTIONS BECOME DUE IN ADVANCE ON JANUARY 1ST IN EACH YEAR, AND IT IS PARTICULARLY REQUESTED THAT THEY MAY BE REGULARLY REMITTED TO THE HONORARY TREASURER, AT THE OFFICE, 8, ADELPHI TERRACE, STRAND, LONDON, W.C.

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PREFACE.

IN issuing the Fifth Volume of the *Journal of the Transactions* of the VICTORIA INSTITUTE—now commencing the seventh year since its organization—some remarks on the events of the past twelve months, and on the present position of the Institute, will not be out of place.

The first subject claiming notice is deeply painful, and demands the position assigned to it;—a few days after the completion of the fifth volume, its editor, Mr. James Reddie, suddenly passed to his rest. The Council cannot now refer to his death without recording its deep sense of the loss which the Institute has thereby sustained, and at the same time expressing the great honour with which it feels sure his name will ever be associated in its annals, not only as the Founder of the Institute, but as one who, uniting many literary and scientific attainments with untiring energy and zeal, proved eminently successful in contributing to the popularity and prosperity of this Society.

At the time when the Institute was thus deprived of the valued services of its late Honorary Secretary, another circumstance caused the Council considerable anxiety, viz.;—for some time the losses by retirement from the Society had not been counterbalanced by the number of those who joined. Now, however, the Council has to congratulate the Members and Associates on the progress made during the past year, of which the following is a short statement:—

INCREASE.							Members and Associates.
Joined	...	...	...	...	...	...	72
Rejoined (having retired in former years)						...	19
							— 91
DECREASE.							
Retired	...	...	...	...	...	...	2
Deaths	...	...	...	...	...	...	4
							— 6

Amongst the new members are several whose support will be of much value. Two may be specially mentioned,—first, his Grace the Archbishop of Canterbury, who, as the Head of the Clergy of the Church of England, has thus marked his approval of an Institute which combines Literary and Scientific men belonging to all denominations of Christians, for objects which are among the highest that a man can place before him. Secondly, Dr. Constantin de Tischendorf, who has become one of the Executive of the Institute, and the letter in which he accepted the office of Honorary Foreign Correspondent is inserted, as it contains the opinion of one well aware of the importance of a thorough support of this Society's objects, a support which a prelate of the Church of England, Dr. Ellicott, when speaking at the Annual Meeting last May, urged all should join in giving.

“Monsieur,

“Je suis très-sensible à la communication que vous avez bien voulu me faire en votre nom et en celui du Conseil du ‘Victoria Institute.’ Le but de votre Institut est des plus nobles, et répond, ce me semble, à un besoin de notre temps. L’offre de m’y associer ne peut que m’honorer, et c’est avec satisfaction que j’accepte l’invitation d’en être un ‘Honorary Foreign Correspondent.’

“Que les travaux de l’Institut soient couronnés d’un véritable succès.

“En vous priant d’agréer vous-même et de présenter au Conseil de l’Institut mes profonds respects, j’ai l’honneur d’être,

“Monsieur,

“Tout le vôtre,

“Leipzig, le 30 Mars, 1871.”

“CONSTANTIN DE TISCHENDORF.

Before leaving this subject, it should be added that, after a full review of the requirements of the Institute, and of all it is now called upon to do on behalf of the cause advocated, it appears that when the number of Members and Associates has been raised to five hundred (of which not more than one hundred should be Associates) the Society may be considered adequate to accomplish its objects, and placed in the position so desirable that it should hold. The necessity for action in this matter will, it is hoped, press itself on each Member and Associate.

The following remarks, by Professor G. G. Stokes, of

Cambridge, though not uttered in reference to the Victoria Institute, somewhat aptly describe its principles, consequently their insertion here may be pardoned :—

“We all admit that the book of nature and the book of revelation come alike from God, and that consequently there can be no real discrepancy between the two if rightly interpreted. The provinces of Science and of Revelation are, for the most part, so distinct that there is little chance of collision. But if an apparent discrepancy should arise, we have no right, on principle, to exclude either in favour of the other. For however firmly convinced we may be of the truth of revelation, we must admit our liability to err as to the extent or interpretation of what is revealed ; and however strong the scientific evidence in favour of a theory may be, we must remember that we are dealing with evidence which, in its nature, is probable only, and it is conceivable that wider scientific knowledge might lead us to alter our opinion. We should be ready to hear the whole of the evidence, and judge honestly from the whole. We should admit the principle of hearing both sides ; not that we should each make the examination, for comparatively few would be competent to do so.

“It is impossible for the bulk of our population, whose lives are spent in earning their daily bread, to weigh the evidence of what are stated to be the conclusions of science. They take them on trust, if they attend to them at all ; and if scientific conjectures are represented to them as the conclusions of science, they are predisposed to accept them as such from the general knowledge they possess of the great things that science has done. It is quite possible that a stumbling-block may thus be placed in the way of religious belief ; for though our fundamental idea of the unity of truth involves, as an axiom, the absence of antagonism between real science and revelation, we have no such guarantee respecting scientific conjecture.

“As the dangers referred to arise from a separation of Science from Revelation, and a determination to ignore one of these two modes of arriving at truth which are open to man, it follows that they are best guarded against by a hearty recognition of both, as coming, in different ways, from the Author of our being.”

F. PETRIE, *Hon. Sec. &c.*

1ST JANUARY, 1872.

JOURNAL OF THE TRANSACTIONS
OF THE
VICTORIA INSTITUTE,
OR
PHILOSOPHICAL SOCIETY OF GREAT BRITAIN.

ORDINARY MEETING, NOVEMBER 15, 1869.

THE REV. DR. THORNTON, VICE-PRESIDENT, IN THE CHAIR.

The Minutes of the last Ordinary Meeting were read and confirmed ;
after which the following elections were announced :—

MEMBERS.—John Laird, Esq., M.P., Birkenhead ; H. T. Bagster, Esq., 10,
Down Street, Piccadilly.

ASSOCIATE, 2ND CLASS.—H. F. Colley, Esq., M.A., J.P., Lucan, Ireland.

Also the presentation of the following books for the Library :—

“Christ our Light.” By Rev. Charles Graham. *From the Author.*

“The Early Years of Christianity.” By E. de Pressensé, D.D.
From Messrs. Hodder and Stoughton.

“Answers to Bishop Colenso.” By the Hon. Judge Marshall.

“Prophetic Outlines.” Series I. and II. By John Rees Mogg.
From Mr. William Freeman.

“The Awakening of Italy and the Crisis of Rome.” By Rev. J. A.
Wylie, LL.D.

“Science and Christian Thought.” By Professor John Duns, D.D., F.R.S.E.

“The Novelties of Romanism.” By Charles Hastings Collette.

“The Soul’s Life : its Commencement, Progress, and Maturity.” By Rev.
E. Garbett, M.A.

“God’s Word Written : the Doctrine of the Inspiration of Holy Scripture
explained and enforced.” By Rev. E. Garbett, M.A.

- “The Christ of the Gospels of the Romance of Reason.” Three Essays ;
by Rev. Dr. Schaff and M. Napoléon Roussel.
- “Christ is All : the Gospel of the Pentateuch.” By the Very Rev. the Dean
of Gloucester. (Four volumes.)
- “The Exodus of Israel.” By Rev. T. R. Birks, M.A.
- “The Bible and Modern Thought.” By Rev. T. R. Birks, M.A.
- “Rome : from the Fall of the Western Empire.” By the Rev. Canon
Trevor, M.A.
- “Ancient Empires : their Origin, Succession, and Results.”
- “The Epistle of Clement of Rome to the Corinthians.” Translated, with an
Introduction and Notes, by B. Harris Cowper.
- “When were our Gospels Written ? with a Narrative of the Discovery of
the Sinaitic Manuscript.” By Constantine Tischendorf.
From the Committee of the Religious Tract Society.
- “Scientific Opinion.” Vol. I. *From Messrs. Wyman.*

A paper was then read, with the title :—

DE PROVIDENTIA DIVINA ; OR, THE RESPECTIVE SPHERES OF DIVINE
PROVIDENCE AND OF THE INVARIABLE LAWS OF NATURE. *By the*
REV. DAVID GREIG, M.A., *Rector of Addington, Bucks.*

This was a long essay, the reading of which occupied Mr. Greig two hours ;
and after a few remarks by Mr. Row, Dr. Rigg, and Mr. Reddie, its full dis-
cussion was adjourned to the next ordinary meeting.

ORDINARY MEETING, DECEMBER 6, 1869.

JAMES REDDIE, ESQ., HONORARY SECRETARY, IN THE CHAIR.

The Minutes of the last Meeting were read and confirmed, and it was announced that Mr. S. F. Williams, of Shrewsbury, had been elected a Member of the Institute.

The presentation of the following books to the Library was also announced :—

- “Facts and Dates.” By the Rev. Alexander Mackay, LL.D.
From Captain Petrie.
- “The Comprehensive Bible.”
- “Bagster’s Chronological Scripture Atlas.”
- “The Bible of Every Land.”
- “Remarks on the Prophetic Visions in the Book of Daniel.” By S. P. Tregelles, LL.D.
- “The Physical History of the Earth.”
- “The Ages of the Earth.” By Rev. D. Pitcairn, D.D.
- “The Pentateuchal Narrative vindicated from the Absurdities charged against it by the Bishop of Natal.” By John Collyer Knight.
- “The Incredibilities of Part II. of the Bishop of Natal’s Work upon the Pentateuch.” By John Collyer Knight.
- “The Gospel Narrative Vindicated ; or, the Roman Census Explained.” By Johannes von Gumpach.
- “The Plurality of Worlds : the Positive Argument from Scripture.” By Rev. Robert Knight.
- “A Collation of the Principal English Translations of the Sacred Scriptures.” By Charles Roger.
From H. T. Bagster, Esq.

The CHAIRMAN.—I am sure the members will be glad to find that the Institute has received such a handsome present of books from Mr. Theodore Bagster, who was only elected a member at our last meeting. I regret that Mr. Greig has not made his appearance here this evening, as had been arranged, for we shall renew the discussion of his paper “ON DIVINE PROVIDENCE” at a great disadvantage in the absence of the author.

A long discussion then took place, in which the Rev. C. A. Row, the Rev. G. Henslow, the Rev. Dr. McCann, the Rev. Dr. Irons, and the Chairman took part.

NOTE.—The Council have decided not to publish Mr. Greig’s paper with the discussion thereon. And as this is the first instance of the omission from the *Journal of Transactions* of a paper read and discussed in the

VICTORIA INSTITUTE, I beg leave to state briefly the principal considerations which influenced the Council in arriving at this determination.

In the first place it was considered that the paper, though not devoid of interest and importance, put forward nothing very conclusive in elucidation of its subject-matter; and the discussion was involved in difficulties which were unavoidable, more especially in the unexplained absence of the author of the paper from the adjourned discussion. I may observe that the main thesis of the paper was intended to show that the sphere of Divine Providence was rather exercised in directing the combinations of the invariable laws of Nature, which affect and interact upon one another, than in interfering with these invariable laws themselves. The argument was, in fact, shadowed forth in Professor Kirk's paper on *The Relation of Metaphysical and Physical Science to the Christian Doctrine of Prayer*,* in which he drew the distinction between the laws of Nature and the usages of Nature, a distinction the importance of which was noticed by Mr. Greig in discussing Professor Kirk's paper, but which was, perhaps, unduly pressed in his own essay.

I may add that the Bye-Laws of the Institute provide for the contingency of papers being read which the Council may deem it inexpedient to publish.† And upon the present occasion, after the Council had decided against the publication of Mr. Greig's paper, he was offered the use of the type as set up, upon very favourable terms, if he desired to publish the paper himself. In reply he wrote declining this offer, "as he did not intend to publish the paper in its present incomplete state." This decision of Mr. Greig may therefore be regarded as confirmatory of that of the Council.

By Order,

J. R., ED.

* *Journal of Transactions*, Vol. II. p. 217, *et seq.*

† Bye-Laws, *Journal of Transactions of Vict. Inst.*, Vol. I. App. p. 483.

ORDINARY MEETING, JANUARY 3, 1870.

JAMES REDDIE, ESQ., HONORARY SECRETARY, IN THE CHAIR.

The Minutes of last Meeting were read and confirmed, and the presentation of the following books was reported :—

"Handbook of the Year 1868."	<i>From Messrs. Wyman & Sons.</i>
"Decandolle's Botany." (18 vols.)	<i>From Dr. Fraser</i>
<i>Saturday Review.</i> (From the commencement, in 28 vols.)	<i>From J. Reddie, Esq.</i>

The CHAIRMAN.—Before calling on the Rev. Mr. Titcomb to read his paper on the "Origin of the Negro," I beg leave to congratulate the Society upon the fact that we take our place to-night in our new rooms. It must not however be supposed that we have got everything perfectly in order. The seats we now have are only temporary seats, and there will have to be other alterations in our arrangements ; but I am sure that all those who are in the habit of attending our meetings must feel that we have made a change decidedly for the better. Bye-and-bye, this room will be opened as a reading-room, and we have had the promise of several periodicals which will be laid on the table ; and I hope that our members in town as well as those in the country may find this a convenient place for meeting. I am sorry that I am again compelled to occupy the chair this evening. I had hoped that Mr. Mitchell would have made his reappearance among us on this occasion, when we are taking our place in our new premises. He wrote to me to say that he hoped to do so, but he had made a mistake of a week, and as he is busy reorganizing his new parish of Purton he will not be able to be with us to-night. At our next meeting I hope he will be able to take the chair.

The Rev. Mr. TITCOMB then read the following paper :—

*THE ORIGIN OF THE NEGRO : AN INQUIRY INTO
THE DERIVATION OF THE NEGRO RACE FROM
OUR OWN PRIMEVAL STOCK. By the Rev. J. H.
TITCOMB, M.A., M.V.I.*

1. **A**MONG all those physical varieties by which the human family is marked off into separate branches, none are more peculiar and none more difficult to account for than those which distinguish the Negroes. To say that these people are unlike any other division of mankind would not be enough.

Their characteristics are so exceptionally and intensely divergent from the rest of us, that there have not been wanting persons even to advocate the theory of their origin by a distinct and independent creation.

2. It will be readily allowed that a speculation so short and summary as this at once cuts the knot of many scientific difficulties. Whether, however, it be really philosophical, may be much doubted, for true philosophy never takes refuge from difficulties by hastily theorizing; its highest office being to labour patiently by observation, inquiry, and experiment; to argue through analysis, analogy, and induction; and only to decide upon results when every available method of investigation shall have been exhausted. That those who deny the possibility of the derivation of the Negro race from our own primeval stock have neglected these fundamental conditions of scientific study, will appear, I think, in the sequel. At all events, it will be one object of this paper to prove that they have done so. I say *one* object of it only, because, much as I may indirectly wish to bring out that fact, I hope I write with a higher and a nobler purpose than to be personally antagonistic, or rudely self-asserting. I would ever desire to cherish upon the forefront of all papers read within this *Institute* the spirit of free, full, and searching inquiry after truth; not, however, for the purpose of confounding an adversary or of triumphing in successful argument, but simply out of homage to truth itself. For it appears to me that honour rendered to truth is at once the best and purest offering which Science can bring into the temple of Nature, or lay down before the footstool of God.

3. The chief divergences of the Negro race from the rest of the human family are *structural*, rather than *physiological*. It would be a great mistake indeed to press this latter element of variation. For with the exception of freedom from the fatal influences of certain malaria, to which all other races succumb, the Negroes are one with the rest of mankind. In longevity, in the period of dentition, the duration of pregnancy, and many other particulars, we discover no difference between this race and others. Some writers maintain the existence of specific psychological differences among them, but these seem accidental rather than specific, resulting from long oppression and degradation. The Negro child is acknowledged by all as not inferior in intellectual capacity to the white child, when properly educated, being both as docile and as quick of apprehension. But it is alleged that when the age of puberty arrives, he becomes incapable of making any further progress; becoming indolent, apathetic, and obstinate. These pecu-

liarities, however, seem accidental rather than specific ; resulting from long oppression and degradation, and from the incidents which are naturally peculiar to centuries of savage life in hot, damp, and depressing climates. The fact that we now have a Negro bishop, of the purest African blood, who is not only a native philologist, but one who is exercising his offices with recognised administrative ability, is amply sufficient to prove that the Negro race has no specific inferiority to others, either mentally or morally.

4. *First* and foremost comes the Colour of the Skin, which, unlike that of the ordinary dark tawny races, shines with a bright jet blackness. This colour (which is not actually born with the child, but develops itself gradually a short time afterwards) arises from a black pigment seated between the *epidermis* and the *cutis vera*, in a thin substance commonly called the *rete mucosum*. There seemed, for a long time, to have been considerable difficulty in deciding whether this substance was merely mucus or a distinct reticular tissue ; but according to the evidence of the latest microscopists, it is now believed that the *rete mucosum* is an actual part of the *epidermis* itself, of which it is only the innermost layer.* It exists, indeed, among all races of men as the constant seat of colouring matter for the skin ; but in no case, except that of the Negroes (and of certain other sub-varieties which may be viewed ethnologically as cognate with them), is this pigment absolutely and intensely black. I am quite aware that many persons point out a long series of links or gradations in colour among the different races,—from those whose skins are fair, to those which are jet-black,—passing through changes so imperceptible that, as they contend, there is no possibility of saying where the lines of distinction are to be drawn. But the origin of the extremely black divergence being in question, the approximating shades must not be necessarily assumed as having been produced in graduated succession from the fairest. On the contrary, it is far more probable that the jet-black races should have first appeared suddenly, and then through occasional intercourse with fairer people have afterwards generated into variable shades of lesser or greater darkness, than that the original fairer race should have become gradually *self-developed* into varieties which were coloured off subsequently by insensible degrees toward Negro blackness. For, as far as I am able to judge by reading, we have no analogous instances within our present range of experience which

* See *Manual of Human Histology*, by A. Kölliker (Busk and Huxley's translation), vol. i. p. 132.

would bear out the theory ; there is not the slightest evidence, that is to say, at the present moment, of any *self*-tendency among the fairer races of mankind to propagate darker colours than their own. Whereas, the other supposition might be shown as coming within the range of possibility at any period of the world ; inasmuch as by the mixture of the fairer races with those which are already established as black, almost every shade of variety can now be generated and perpetuated. I feel bound, therefore, to place this black pigment of the Negro skin as the first, if not the greatest, of those abnormal characteristics which separate that race from the rest of mankind.

5. A *second* peculiarity of the Negroes is the Texture of their Hair, which, at first of a chestnut-brown, straight, and only curled at the ends, afterwards invariably grows black, short, and crisp, and has often been compared to wool. Not that there is any real analogy between the two ; for the surface of the filament of wool is rough, whereas in hair, and even in Negro hair, as far as the visible eye is concerned, it is smooth ; added to which, all human hairs drop off singly and periodically, while wool falls off in masses. While, therefore, it cannot be said that the Negro race have wool upon their heads in place of hair, yet the harsh, crisp, and short frizzled covering which they possess is certainly a most divergent and abnormal characteristic. It is true that sub-varieties of the Nigritian families may be found with longer and more luxuriant locks, produced, in all probability, either by climate or other exceptional causes ; but, on the other hand, there is not a single group to be found among the rest of mankind which is marked by any such woolly fleece ; so that this portion undoubtedly stands out as one of their most noteworthy peculiarities.

6. We come now, in the *third* place, to the Skull of the Negro, which, regarded in its true typical character, as exemplified among the indigenous tribes of Western Africa, is marked by a combination of the most striking peculiarities. Described in popular rather than anatomical terms, the forehead is depressed, the cranium contracted, the jaws project, the upper teeth are oblique instead of perpendicular, the chin recedes, and the nasal cavity is large, the nose consequently broad and flat, and the lips thick ; features by which the intellectual characteristics of man are reduced, and the animal proportionately exaggerated. All those parts of the skull, for example, which are connected with the organs of sense are unusually large ; while the facial angle, which is an unmistakable measurement of brain-power, is unusually small. Add to this an extreme thickness of skull, so that it is often used in quarrels for butting purposes, after the manner of rams and

sheep. Here again we have a feature which distinguishes the Negro race from the rest of mankind. For, although there may be a few individual specimens among other races in which we discover some approximation to this debased and prognathous skull, and although there may possibly be a few individual instances of Negro approximation to the elliptic or pyramidal skull of other nations, yet, taking each in the mass, there is a decided separation between them; a separation so entire and decided, that the Negro race must still be regarded, in these respects, as a solecism in the midst of humanity.

7. There is a *fourth* difference, which ought not to be overlooked in a paper of this kind, viz., the size of the Pelvis. After very careful measurements, it has been found that in many instances the Negro pelvis is smaller in both its diameters than the European. Dr. Vrolik, of Amsterdam, indeed, has remarked that the pelvis of the male negro, in the strength and density of its substance, and of the bones which compose it, resembles the pelvis of a wild beast; while that of the female combines lightness of substance and delicacy of form and structure. The same distinguished writer asserts the existence of several other specific differences; but as the number of cases tested is as yet insufficient for the formation of any satisfactory judgment, and as Professor Owen is of opinion that such differences are not necessary characteristics of race,* I will not enter further into them.

8. Other structural peculiarities have been also noted, such as a greater length in the lower arm in proportion to the upper arm and the height of the body; the flatness also of the hands and feet, and the flexibility of the fingers and toes. The bones also of the legs are bent outwards, under the condyles of the thigh-bone, so that the knees stand further apart, and the feet are turned more outward than in Europeans.

9. The problem which ethnologists have to solve is, How were these structural peculiarities originated?

To this question five answers may be given:—

- I. *By an act of independent and separate creation.*
- II. *By a miraculous judgment on the person of Canaan.*
(See Gen. ix. 25.)
- III. *Through the action of food, climate, and other external causes.*
- IV. *Through the principle of Methodical selection, by which new varieties of animals are often artificially produced.*
- V. *Through the operations of Natural selection, after some*

* Owen's *Comparative Anatomy*, vol. ii. p. 578.

unexpected appearance of a congenital variety bearing this peculiar Negro character.

10. (I.) The theory of an origin of the Negro race by means of a SEPARATE CREATION is one which can only be fairly arrived at by negating the possibility, or, at all events, the slightest probability, of any other theory. It may be contended that all the five or more leading varieties of mankind were created in distinct zoological centres of the earth, the Negro race having been one of these. This theory, as I have already remarked, at once cuts the knot of our present difficulties; but still it is a theory, and one which has been solely invented as an escape from the apparently insoluble nature of the problem now before us. This idea will not, therefore, be argued on any merits of its own, but simply eliminated from consideration by the proofs which I hope to adduce in favour of an origin of the Negro variety through natural processes. If such a view can be established, falling in as it does with the testimony of revelation, I think it will be quite superfluous to go on further by inventing a speculative theory, which must then become both unnecessary and impertinent.

11. (II.) The next theory may be as quickly put out of view, viz., that of a MIRACULOUS JUDGMENT ON THE PERSON OF CANAAN. For if the origin of Negro diversities be miraculous, of course we can dispense with any further inquiries. The bare supposition, however, is so pre-eminently gratuitous and unwarrantable, that I scarcely have patience to name it; the more so, because, to those who know anything of ethnic genealogy, it directly contradicts the plainest facts of the case, the African Negro being only a small subsection of Canaan's posterity, and therefore no proper representative of this curse, even if it had ever fallen in this manner upon Canaan. Independently, however, of this, I think it will be generally allowed that where Holy Scripture is silent on the subject of miraculous agency, we have no right to invent fresh miracles for ourselves in order to get rid of scientific difficulties. No course of conduct can be more fatal to the interests of Divine truth; none more calculated to alienate men of science from theology; none more likely to increase those unfortunate barriers, which already too much separate philosophy and revealed religion.

12. (III.) The next, indeed the first theory which demands serious discussion, is THE ACTION OF FOOD AND CLIMATE, OR OTHER EXTERNAL FORCES. That in the animal kingdom such causes often operate largely in modifying size, colour, and even structure, admits of no doubt.

13. With respect to *Food*, it is well known that hemp-seed

given to birds of the finch tribe will turn them black. Rich and plentiful food, also, when given to young swine, directly tends to make their heads both broader and shorter; whereas poor food works the contrary result. Horses, too, fed on fat, marshy grounds, grow to a large size; while on strong soils or dry heaths they remain small.

14. With respect to *Climate*, it is equally well established that among domesticated swine, living under constant shelter from the weather, the bristles become much diminished. In the same way, exposure to, or protection from, the influences of climate, will more or less affect the hair of all animals. Mr. Darwin says that in the West Indies, about three generations are enough to produce a very great change in the fleece of sheep. In Africa their fleece degenerates into a coarse hair. The mastiff and goat from Thibet, when brought down from the Himalaya mountains to Kashmir, lose their fine wool. At Angola, not only goats, but shepherd dogs, and even cats, have fine fleecy hair; the thickness of their fleece being attributable to severe winters, and its silky lustre to hot summers. Karakool sheep lose their peculiar black curled fleeces when removed into any other country. Indeed, cases have been known, even within the limits of England, of two breeds of sheep having been slightly changed in consequence of being pastured in different localities.*

15. That results of an analogous nature extend to the human species, is indisputable. Thus the Turks now in Europe, whose ancestors came originally from Mongolia, and who, before their settlement in the West, possessed all the Turanian characteristics of physiognomy, are at present possessed of fine oval skulls and other corresponding features. The Hungarians also, whose ancestors came originally from the Uralian mountains, and were of the same stock with the degraded Ostiaks and Ugrians, and who, when they first made their appearance in the ninth century on the river Danube, had yellowish-red hair, broad noses, and were of small stature, are now a handsome people, with regular European features. It will, perhaps, be said that both these cases may have been influenced by intermarriages with members of the Indo-European family; and, of course, so far any special argument drawn from the action of climate, food, &c., as having modified their original form, will fail. But, to say the least of it, these intermixtures of race were not likely to have been sufficiently general as to have permeated the whole of each nation. Whereas, arguing analogically

* Darwin's *Variation of Animals and Plants*, vol. ii. p. 278.

from the cases just mentioned out of the animal kingdom, nothing is more natural than to suppose that a change from the wild life of savage hunters and nomad wanderers, for the fertile plains, rich harvests, and more civilized life of a settled people in the south of Europe, would prove amply sufficient for this modification in physical form and appearance.

16. The condition of the Jews in various parts of the world presents us with similar results; for in Saxony we find that blue eyes are not infrequent among them, and that in Spain and Portugal their skins are darker than in Britain, while in Russia and Poland they not infrequently have red hair. I will not lay stress on what are called the black Jews of the Malabar coast, because the colony there consists both of white and black members, and, according to the best evidence I can collect, the Hindu complexion of the latter, and their very imperfect resemblance to the European Jews, indicate that they were detached from their parent stock in Judæa many ages before their brethren in the West, and that, during that time, they have intermarried with the Hindus;* indeed, the white Jews look upon the so-called black Jews as an inferior people; and Dr. Wolff affirms that the latter are either Hindu proselytes or a mixed race.†

17. But if climate did not blacken these Malabar Jews, it may be asked, What made many of the natives themselves black? How are we to account for the more than tawny—the almost African—darkness of many of the Hindus throughout different parts of India? Any full answer to this question would take me so far from my present subject that I dare not enter upon it; but I may observe in passing, that if the opinion of several illustrious writers (Sir W. Jones, Professor Ritter, and others) be true, viz., that the aboriginal population of India from the Himalayas to the Deccan was more or less of Negro origin,‡ the difficulty is easily solved.

18. Reverting, however, to the effects of climate, let me refer to the alteration which has been produced upon the typical physiognomy of the English in the United States, where a few centuries of localization on that continent has been enough to produce a distinct sub-variety of mankind. Long-continued residence in a new climate has also not been without an effect even on the Negroes themselves. Dr. Carpenter says that in our old West-Indian colonies, the

* This was the opinion of the Rev. Claudius Buchanan, who spent some time among these persons, and investigated the subject fully.

† Dr. Wolff's *Missionary Researches*, p. 308.

‡ See this question slightly discussed in Prichard's *Researches into the Physical History of Mankind*, vol. iv. p. 228.

physiognomy of some of the present Negroes, as far as bony structure is concerned, now approximates to that of Europeans. And he rightly intimates that such an alteration must obviously be the result of climate, education, and other external causes; for if it were produced by any intermixture of blood, it would be apparent at once by an alteration in colour also. Changes of an exactly opposite nature may be equally remarked. Dr. Carpenter says:—"Want, squalor, and ignorance have a special tendency to induce that diminution of the cranial portion of the skull, and that increase of the facial, which characterize the prognathous type, as cannot but be observed by any one who takes an accurate and candid survey of the condition of the most degraded part of the population of the great towns of this country; and as is seen to be the case with regard to the lowest of our Irish immigrants."* It is well known, indeed, that after the English forces had, in 1641 and 1689, driven away the native Irish into the extreme west and north-west districts of Ireland, where they became exposed to hunger, ignorance, and all the elements of uncivilized life, they so degenerated physically that their descendants can, at the present moment, be distinguished from their countrymen in the adjoining parts by their exceptionally projecting jaws, high cheek-bones, depressed noses, and bandy legs. Such are the operations of nature on the same race when placed under different external conditions of human life!

19. Admitting, however, on these general considerations, that climate, food, and newly-acquired habits of life may have exercised a physical influence upon some of the early descendants of primeval man, it is, nevertheless, very questionable whether those extremely abnormal types which now mark the Negro, more particularly the jet-black pigment of his skin and his wool-like fleece of hair, could ever have been thus produced.

20. For, if so, one might reasonably have looked for a development of similar physical characteristics within the vast territories of North and South America, where the same tropical heats, fluviatile swamps, jungle damps, are to be found, and where all the same barbarous conditions of human life must have been in existence for many ages. Yet no such characteristics are discoverable. There is not a single native tribe from Terra del Fuego to the Rocky Mountains or Greenland snows which really corresponds with the Negro variety.

21. Indeed, coming even to Africa itself, how can we, on this principle, account for the fact that in certain parts the white and black races have lived for centuries unchanged in

* Carpenter's *Principles of Human Physiology*, p. 858.

actual juxtaposition? In the country of the Senegal, for example, we find the Moorish race on the left banks, and the Wollofs or Jollofs—an intensely black sub-Negro variety—on the right, between the Senegal and the Gambia.

22. Again, if this climatological theory be correct, how is it that Negroes can pass into other climates, and continue there for many generations, subject to conditions of life quite distinct from those of their remote ancestors, and yet exhibit the same permanent characteristics of skin and hair? In ancient Egypt, for example, we have full monumental proofs of a fixed population of Negroes from the time of Moses to the Ptolemies (a period of twelve centuries); yet their portraiture throughout is one and the same, no climatological or other adventitious circumstance appearing to have modified them in the slightest degree. They have also dwelt upon the continent of America, for about three hundred years, without the least alteration,—I will not say in skull or bony structure, for education, freedom, and civilization do, no doubt, alter that, as I have already remarked; but, at all events, in the colour of their skins and the texture of their hair. It will be said, perhaps, that this survival of their original type is to be accounted for by the constant importation of fresh natives from Africa. To a certain extent that argument may have weight, but I think it can scarcely overthrow the whole force of the preceding observations. For the late slave population of the United States was reared on many plantations as a domestic institution, and yet, when left unmixed with European blood, facts abundantly prove that no influence of food or climate has ever had the slightest tendency to alter the character of its skin or hair.

23. In proportion, then, as these inherent and constitutional powers of race can thus prove themselves superior to all the influences of food and climate, continued throughout centuries, it appears to me to be the less probable that any such aboriginal causes could ever have produced these intensely potent and obstinately permanent characteristics.

24. At all events, should this theory be established, it can only be reasonably substantiated by extending the chronology of the human race to a period of indefinite antiquity. For centuries, which have produced so little change by way of reversion, must be multiplied enormously in order to calculate the probable rate at which they produced an origination of these abnormal characteristics. Egyptian paintings are to be seen coeval with the time of Moses, if not of Joseph, in which the Negro features are as plainly marked as at present. At Medinet-Abou, among the bas-reliefs of Rameses III.,—at Abou Simbel, among the portraits of bound prisoners driven before

Rameses II.,—and at Karnak, among heads which are represented as smitten by Sethos I.,—we find Negroes true to their present type in all particulars. If, then, the whole Negro variety had been climatologically thrown off from the parent stock between the Flood and the time of Moses or Joseph, that interval must have greatly exceeded all our conceptions of the period as derived from the pen of Moses,—an apparent discrepancy between Scripture and scientific research which I have no wish to establish, if, by adopting any other theory, all the phenomena of the case can be otherwise satisfactorily explained.

25. It may possibly be urged that the influences of climate were at that time much more likely to develop physical changes in man with rapidity than they have been since. But every candid mind will acknowledge that this is mere speculation, and that in arguments of a scientific nature all speculation ought to be dismissed which cannot be rendered probable by some form of presumptive proof. I go forward, therefore, into other grounds of observation, with a view to see whether we cannot find certain processes of nature, through which physical varieties can be now produced, which are quite as divergent from the ordinary types of animal life as the Negro variety is from the rest of mankind.

26. For this purpose let us look into (IV.) THE EFFECT OF SYSTEMATIC WEEDING, UNDER THE PRINCIPLES OF METHODICAL SELECTION.

27. Every one who has studied Natural History must be aware that new varieties of animals may be artificially produced by crossing breeds through carefully-selected pairs. I shall *first* illustrate this fact, and *afterwards* consider whether such a class of phenomena can be fairly adapted to any other theory of Negro origination.

28. Perhaps the best illustration of this part of the subject may be taken from the family of swine. All the known breeds of swine may be divided into two groups: the one group going by the name of *Sus Scrofa*, and the other of *Sus Indica*, between which breeds there are well-known differences, especially in the conformation of their skulls. Now, as a matter of fact, it is found that when any two of these opposite breeds are crossed, the one so modifies the other that the greatest changes are very quickly produced. It is stated, indeed, by one of the very best authorities,* that $\frac{1}{32}$ nd part of the blood of the *Sus Indica* infused into a breed of the *Sus Scrofa* is sufficient to produce a distinct modification of the

* Nathusius, *Schweinschädel*, s. 138. Quoted in Darwin's *Variations of Animals and Plants*, vol. i. p. 69.

skull of the latter variety. This fact at once illustrates the power which careful and scientific agriculturists have in changing the character of particular breeds—a practice which they are pursuing constantly. “The improved Essex pigs, for example, chiefly owe their present excellent qualities,” says Mr. Darwin, “to crosses originally made by Lord Western with the Neapolitan race, and to subsequent crosses with the Berkshire breed.”* So with our British sheep. The Oxfordshire downs, which now rank as an established breed, were produced about the year 1830, by crossing Hampshire or Southdown ewes with Cotswold rams. So with our fowls. The Sebright bantam fowl was formed about sixty years ago, by a complicated cross, which I need not here describe.†

29. It should be remarked, however, that for the production of new breeds through complex crosses, the most careful and unremitting selection of well-chosen pairs through continuous generations is required. This remark is especially important as bearing upon the human problem now under discussion; for that simple and temporary modifications of form may be produced by occasional crossings, whether among animals or men, no one who knows anything about the subject will entertain a doubt. But to produce permanent uniformity in a crossed breed, careful selection and rigorous weeding are in the highest degree necessary, without which any particular variation desired will be always intermittent and uncertain.

30. Sometimes an abnormal specimen, which the owner desires to perpetuate, unexpectedly and spontaneously makes its appearance. In this case, the necessity for crossing it with other breeds is not so important as its careful propagation through the occasionally transmitted specimens of its own type; under which circumstances a new and more strongly-marked variety may be established than could possibly have been produced, even with the greatest skill, under other circumstances. Thus, in one recorded case, when a rabbit produced among her litter a young one having a single ear, the owner afterwards established a breed which steadily produced one-eared rabbits.‡ Again, in Massachusetts (United States), a ram having been accidentally born with short crooked legs and a long back, it was (for reasons which need not here be explained) soon multiplied and raised into a new stock, known by the name of the Ancon breed.§

* See Darwin, *Variations of Animals and Plants*, vol. i. p. 78.

† See Darwin, *idem*, vol. ii. pp. 95, 96.

‡ Anderson's *Recreations in Agriculture*, &c., vol. i. 68.

§ This Ancon breed has since been allowed to die out, having been supplanted by the Merino breed.

31. By the same valuable process of methodical selection, there is no doubt that many permanent varieties of domesticated animals might be formed, if breeders only thought it worth their time and trouble. A mare has been known (*e. g.*) to produce three foals successively without tails; so that, "if necessary," says Mr. Darwin (and I perfectly believe him), "a tailless race of horses might have been formed." Again, in Paraguay, horses are occasionally born with hair like that on the head of a Negro; and the same peculiarity is transmitted even to half-breeds. These animals are generally destroyed at their birth; but if they were bred under careful selection, with a view to their permanent establishment as a separate variety, nothing would be easier than to obtain a new breed of horses different from anything we have ever yet seen in the world.

32. Facts of a similar nature might easily be brought forward from other departments of the animal kingdom. Who can look among pigeons—at the carrier, the pouter, the fantail, and the tumbler,—or at Polish, Hamburg, and Cochin China fowls,—without at once perceiving that all these specimens of domesticated birds must have been either slowly originated by a methodical selection of similar pairs, propagated until their respective peculiarities became established, or else more rapidly produced (as in the case of the Ancon sheep) by judicious methods of weeding, after some unexpectedly abnormal specimens had arisen which were found capable of transmitting their own exceptional characteristics?

33. But the question we now have to decide lies in the application of these phenomena to the human race. What we wish to know is, whether this principle of methodical selection can afford us any probable theory for the origin of the Negroes.

34. That, regarded from a merely scientific point of view, such a theory would be possible, seems very clear. But can we regard the question in this scientific manner? Are we at liberty to assume it as in the least degree probable, that at any period of the world there could ever have existed a state of society in which so artificial and natural a system of human generation was practised? From all the evidences which are furnished, either by history or experience, no principle has ever yet regulated the choice of pairs, and the propagation of the human species, but the working of natural affections, or of self-willed interests. Now of natural affections, it is simply absurd to say that they could ever have been guided or coerced mechanically, according to the required laws of methodical selection. The bare notion of any human beings, thus arti-

ficially shutting up the natural flow of their affections, and denying themselves the objects of their free choice, in order to experiment upon their race, and to work out scientific problems in biology or ethnology, is ridiculous. Nor can this idea be at all more reasonably entertained, if we take it in connection with any possibly supposed motives of self-interest. There can be no doubt that in every country, both civilized and savage, such motives do very often influence the choice of men in marriage. But in all such cases the secret is to be found in a desire to obtain rank, or riches, or some other coveted interest; and has never yet been traceable in connection with a wish to form new varieties of the human race, nor even to perpetuate particular family characteristics. What self-interests could be served by such desires? Least of all, what, by the perpetuation of such unlovely characteristics as those which mark the Negro race? When reduced to terms like these, all application of the preceding principles of biology fails; and the argument for a Negro origin by means of analogies with the various origins of domesticated varieties in the lower animal life, becomes hopeless and impossible.

35. Beside which, even if any analogies were thus capable of being sustained, it is very questionable how far they could be made successfully applicable to the problem now before us. For, although we have a right to speak of these different breeds of pigs, sheep, fowls, &c., when thus artificially produced, as distinct and permanent varieties, so long as they live in a state of induced domestication, yet it is open to considerable doubt whether, if taken out of that state of domestication, and allowed to become feral, they would not speedily revert to their primitive stock, or at all events become so essentially altered that the parallel we seek to establish would no longer hold. Take our domesticated pigs as an example; which, whenever they have been allowed to become feral, have everywhere re-acquired the dark colour, thick bristles, and large tusks of the wild boar. Those which were imported from Spain to the West Indies in 1509, degenerated into a monstrous race, with toes half a span long; while some grew twice as large as their European progenitors. These instances, to which many others of the same kind might be added, seem to imply a tendency in domesticated animals, which have been bred through the principle of methodical selection, always to revert to their primordial condition, as soon as they are left to themselves in a wild and uncultivated state. Impossible, therefore, as the supposition was at first, that the Negro race should represent a variety of mankind produced through methodical selection, it becomes so in a

much greater degree by the reflection that, if the analogy on which it is founded were traced out far enough, this race ought, when transported from its native soil, to revert to its primordial elements, and become assimilated with that more ordinary type of mankind from which, according to this theory, it must have been eliminated.

36. (V.) What then remains? There is only one other theory to be considered; viz., that which refers the origination of the Negro to

THE OPERATIONS, NOT OF METHODICAL, BUT OF NATURAL SELECTION, AFTER AN UNEXPECTED APPEARANCE OF CERTAIN CONGENITAL VARIETIES AMONG SOME OF THE HAMITIC RACE AT A REMOTE ERA OF THE WORLD.

37. I have already spoken of the occasional appearance of congenital varieties among animals and birds. The same thing occurs among men. We cannot understand it or explain it. Nevertheless, there can be no doubt that, according to some mysterious laws of nature, certain abnormal features occasionally make their appearance at the birth of particular individuals. Nay, more. Such peculiarities may be hereditarily transmitted, even through marriages with others of the ordinary type. Upon these two grounds of observation, each properly supported by authentic facts, I shall endeavour to show that we are furnished with data, on which we may fairly and reasonably base a theory of the origin of the Negro race, without being under any necessity for attributing it to a separate creation, or for extending the chronology of mankind to millions of years instead of thousands.

38. As to the tendency of human nature to reproduce general family likenesses through successive generations, the fact is so well known that writers often allude to it. Montaigne, in one of his essays, asks, "How can nature carry on these resemblances with so irregular a progress, that the son shall be like his great-grandfather, and the nephew like his uncle?"* And as with family likenesses, so with diseases. That diseases both of mind and body are transmitted hereditarily, is a melancholy truth only too common in the experience of every medical practitioner. With regard to gout, it is stated that, in hospital cases, fifty per cent. result from this cause; while in private practice the percentage is even greater. So with cancer, consumption, insanity, which, with many other complaints, continually run in families. Nay, more. They often make their appearances at about the same period of life.† Human nature, therefore, having this decided tendency

* Montaigne, book ii. ch. xxxvii.

† See *Essay on Hereditary Diseases*, by Dr. J. Steinam. 1843.

to reproduce and perpetuate the more marked diseases of certain families, it need not be surprising if particular instances of family malformations should, from time to time, be met with. The transmission from one generation to another, for example, of such defects as early baldness, greyness of hair, squint, harelip, &c., will perhaps be familiar to most persons. Other instances, however, of a less frequent character must be noted.

39. Thus it is a well-known fact that the thick lip introduced into the Imperial house of Austria by the marriage of the Emperor Maximilian with Mary of Burgundy, is visible in their descendants to the present day, after a lapse of three centuries. Mr. Darwin, quoting the *British and Foreign Chirurgical Review*,* states a case in which congenital absence of the iris had been transmitted for three generations, and a cleft iris for four generations in the male line. He also gives another instance of a family of sixteen sons and five daughters, all of whom had eyes resembling in miniature the markings on the back of a tortoise-shell cat, adding that the mother of this large family had three sisters and a brother, each of whom were likewise marked, and that they had derived this peculiarity from their mother, who belonged to a family which had been notorious for transmitting that defect to their posterity.

40. A paper published in the *Philosophical Transactions* of 1814† records the particulars of a family which exhibited the peculiarity of supernumerary fingers and toes hereditarily transmitted through four generations. This defect had been introduced by a female who herself possessed six fingers on each hand and six toes on each foot. From the marriage of this woman with a man naturally formed were produced ten children with a supernumerary member on each limb; and an eleventh child, in which the peculiarity existed in both feet and one hand. This eleventh child, being a girl, married a man of the ordinary formation, and had four children, of which three had one or two of the limbs in question formed naturally, and the rest with the supernumerary parts; while the fourth had six fingers on each hand and as many toes on each foot. The latter married a woman naturally formed, and had issue by her eight children; four with the usual structure, and the same number with supernumerary fingers or toes. Professor Huxley, in his lectures on the *Origin of Species*, gives an account of another case which may be equally relied on as authentic, and which he traces through three generations.

* For April, 1861, pp. 482-6.

† Part I. p. 94. Quoted from Lawrence's *Lectures on Man*.

His remarks being much to our present purpose, I now subjoin them :—

“ Kratio Kelleia, a Maltese, was born with six fingers upon each hand, and the like number of toes to each of his feet. He married when he was twenty-two years of age, and as, I suppose, there were no six-fingered ladies in Malta, he married an ordinarily five-fingered person. The result of that marriage was four children. The first, who was christened Salvator, had six fingers and six toes, like his father. The second was George, who had five fingers and toes ; but one of them was deformed, showing a tendency to variation. The third was Andrè ; he had five fingers and five toes, quite perfect. The fourth was a girl, Marie ; she had five fingers and five toes, but her thumbs were deformed, showing a tendency toward the sixth.

“ These children grew up, and when they came to adult years they all married ; and, of course, it happened that they all married five-fingered and five-toed persons. Now let us see what were the results. Salvator had four children ; they were two boys, a girl, and another boy. The first two boys and the girl were six-fingered and six-toed, like the grandfather ; the fourth boy had only five fingers and five toes. George had only four children : there were two girls with six fingers and six toes ; there was one girl with six fingers and five toes on the right side, and five fingers and five toes on the left side, so that she was half and half ; and the last had five fingers and five toes. The third, Andrè, you will recollect, was perfectly well-formed ; and he had many children whose hands and feet were all regularly developed. Marie, the last, who, of course, married a man who had only five fingers, had four children : the first, a boy with six toes ; but the other three were normal.

“ Now, observe what very extraordinary phenomena are presented here. You have an accidental variation, arising from what you may call a monstrosity ; you have that monstrosity tendency or variation diluted in the first instance by an admixture with a female of normal construction ; and you would naturally expect that, in the results of such an union, the monstrosity, if repeated, would be in equal proportion with the normal type ; that is to say, that the children would be half and half, some taking the peculiarity of the father, and the others being of the purely normal type of the mother. But you see, we have a great preponderance of the normal type. Well, this comes to be mixed once more with the pure, the normal type, and the abnormal is again produced in large proportions, notwithstanding the second dilution. Now, what would have happened if these abnormal types had intermarried with each other ; that is to say, supposing the two boys of Salvator had taken it into their heads to marry their first cousins, or the two first girls of George, their uncle ? You will remember that these were all of the abnormal type of their grandfather. The result would probably have been in every case a further development of that abnormal type. . . . This case is narrated only as far as the third generation. Certainly, it would have been an exceedingly curious thing if we could have traced this matter any

further. *Had the cousins intermarried, a six-fingered variety of the human race might have been set up.*"*

41. As this last remark of Professor Huxley (which I have ventured to italicize) introduces the exact line of argument that I am about to adduce in relation to the derivation of the Negro race from our own primeval stock, I cannot but here anticipate, what I feel sure will be at once objected to, (*viz.*) the unnaturalness of our presupposing the contraction of any such monstrous intermarriages. It is a difficulty which I freely admit. Of course, under such circumstances, to give satisfactory reasons for the perpetuation of the Negroes, springing up, as I suppose them to have done, in consequence of these abnormal births and intermarriages, will require the greatest care and consideration. In an age of the world like the present, it would not only be improbable, but impossible. For the present, however, I say nothing on that point, because—before we go further—I wish to illustrate this striking tendency toward an inheritance of certain physical peculiarities by means of some other instances.

42. Two most singularly exceptional births, well known to students in ethnology, have been recorded, the peculiarities of each of which were hereditarily transmitted through at least three generations; the one family being Siamese and the other English. In the Siamese family (described by Mr. Crawford in his Embassy to the Court of Ava, and well stated by Dr. Latham in his work entitled *Descriptive Ethnology*) we learn that the grandfather of this family was five feet three inches and a half. Let me quote his words:—

"The whole forehead, the cheeks, the eyelids, the nose, including a portion of the inside, were covered with fine hair. On the forehead and cheeks this was eight inches long, and on the nose and chin about four inches. In colour it was of a silvery grey; its texture was silky, lank, and straight. The posterior and interior surface of the ears, with the inside of the external ear, were completely covered with hair of the same description as that on the face, and about eight inches long: it was this chiefly which contributed to give his whole appearance, at first sight, an unnatural and almost inhuman aspect. He may be strictly said to have had neither eyelashes, eyebrows, nor beard; or, at least, they were supplanted by the same silky hair which enveloped the whole face. The whole body, with the exception of the hands and feet, was covered with hair of the same texture and colour: it was most plentiful over the spine and shoulders, where it was five inches long; over the breast it was

about four inches. He had a peculiar cavity also in the formation of his teeth. In the lower jaw there were but five, the canine teeth and molars being almost totally wanting. The gums, where they should have been, were a hard, fleshy ridge ; and, judging from appearances, there was no alveolar process. He married when twenty-two years of age, the King of Ava having made him the present of a wife. By this woman he had four children, all girls. In the form of the three first there was nothing remarkable. In the case of the youngest child, however, at six months old, hair began to appear all over the ears ; and, at one year old, on different parts of the body. Like her father, too, she was deficient both in her canine and molar teeth. As she grew older, the whole of her body was more or less covered with hair. Except the extreme upper lip, no part of the face was visible. The nose, densely covered with hair, curving out and pendent like the wisps of a fine Skye terrier's coat, had a most strange appearance. Strange as it may seem, she married and had two sons. The elder boy had nothing abnormal about him. But the youngest, who was only an infant when the account was given, evidently took after his mother and grandfather ; the child's ear being, at fourteen months, full of long silky floss, and having, even then, a moustache and beard."*

43. The case of the English family (described by Lawrence, in his *Lectures on Man*,† also by Prichard, in his *Physical History of Mankind*‡) equally exhibits the transmission of an abnormal variety through three generations. The grandfather of this family was presented, I believe, as a boy in 1731, before the Royal Society. He was born in Suffolk, and named Edward Lambert ; his peculiarity consisting in a skin thickly covered with warty projections which were periodically moulted. In a paper belonging to the *Philosophical Transactions* of 1814 § we read :—

“It was not easy to think of any sort of skin or natural integument that exactly resembled it. Some compared it to the bark of a tree ; others thought it looked like seal-skin ; others, like the skin of an elephant, or the skin about the legs of the rhinoceros ; and some took it to be like a number of warts uniting and overspreading the whole body. The bristly parts, which were chiefly about the belly and flanks, looked and rustled like the bristles or quills of a hedgehog shorn off within an inch of the skin.”

44. In a subsequent account, given twenty-four years afterwards, this youth, then grown to man's estate, presented exactly the same appearance. He was at that time exhibited in London as the Porcupine Man. This account goes on to state

* See Latham, as above, vol. i. pp. 200–203 ; some parts of this quotation being condensed rather than verbatim.

† Pp. 306, 307.

‡ Vol. i. p. 349.

§ No. 424.

that he had then married, and had had six children, “*all* with the same rugged covering as himself.”* What is more extraordinary—even his two grandsons, John and Richard Lambert, were similarly affected; so that, without attempting to trace the transmission of this abnormal variety beyond the third generation, we have proof, as in the former instance, of the wonderful powers of nature in handing down to posterity, through the principle of family inheritance, some of the greatest monstrosities.

45. Assuming, therefore, that the Negro variety sprang up in this way through some abnormal prototype, we have, in the various cases just mentioned, a rational and just foundation for the theory. Nor can the idea be called either novel or unscientific. Lawrence, for example—just as Huxley in relation to polydactylism—suggests the possibility of our applying this inheritance of abnormal varieties to the formation of new types of mankind.

“Let us suppose,” says he, “that the Porcupine family had been exiled from human society, and been obliged to take up their abode in some solitary spot or desert island. By matching with each other, a race would have been produced more widely different from us in external appearance than the Negro. If they had been discovered at some remote period, our philosophers would have explained to us how the soil, air, or climate had produced so strange an organization; or else would have demonstrated that they must have sprung from an originally different race; for who would acknowledge such bristly beings for brothers?”

46. We are, therefore, now brought up face to face with what appears to me to be the most satisfactory solution of the problem placed before us. One can see in a moment, as I showed in the last division of this paper, how a new variety of mankind might be thus artificially produced by means of the continued and methodical selection of abnormal pairs, care being taken to get no dilution of blood through recurrence to the original stock. But the difficulty is to apply such a state of things to the nature of the case; for, as I have before remarked, common sense teaches us that this is the very process which would naturally be most avoided under all such instances of malformation. Consequently, if the Negro characteristics are to be considered as an abnormal deviation from the more ordinary types of mankind, originated through some strange and unexpected birth, we must account for their transmission and perpetuation, not on the principle of metho-

* *Phil. Trans.*, vol. xlix. p. 21.

dical, but of natural selection. We must show, that is to say, how circumstances may have arisen under which these characteristics could not but have become perpetuated, even in spite of a desire to obliterate them. In other words, we must show how certain conditions of existence may possibly have acted upon man in an early period of the world's history, by means of which Nature herself may have forced forward selective breeding, and in that manner may have indirectly brought about exactly the same results as those which would have been produced through methodical selection.

47. For this purpose we must revert to those pre-historic periods of the human race in which its primary migrations commenced, and when the first physical varieties of man began to appear. Most of the simple varieties were, I doubt not, rapidly developed by means of climate, food, location, and all those other external forces, within the range of which the wandering hosts were driven; exactly in the same sort of way as certain natural varieties of the wild animals were originated. The tigers, for example, now so diverse in their characteristics, as met with in Bengal and Siberia, were confessedly produced by such means from one primeval species. In the same way we can easily conceive how, in the primary distribution of mankind, the Turanian, Indo-European, and Hamitic families gradually began to assume their present distinguishing types. Nor would these first physical alterations of the aboriginal type of man require any excessive period of time. Even Mr. Darwin says,* "In some few instances a marked effect has been produced *quickly* on all [the italics are his own], or nearly all, the individuals which have been exposed to some considerable change of climate, food, or other circumstance. This has occurred, and is now occurring, with European men in the United States, with European dogs in India, with horses in the Falkland Islands, with foreign oysters in the Mediterranean, and with maize grown in Europe from tropical seed."

48. Imagine, then, that soon after the commencement of those migrations by which the great Hamitic family ultimately became distributed over the continent of Africa, and while, as yet, the originally coloured skin of man (though darkened in a measure by hotter suns or bilious climates) remained more or less definitely clear; imagine that a woman of some particular place foremost in the van of that migration had unexpectedly given birth to a boy, who soon became marked by a jet-black skin, and crisp wool-like hair, and was otherwise

* *Variation of Animals, &c.*, vol. ii. p. 290.

possessed of a strong tendency to develop certain peculiarities in the bony structure of his body. In supposing the uprising of some such sudden congenital variety as this, there is really nothing more abnormal or surprising than that which has already been proved to have occurred in the case of the hairy and porcupine families; perhaps scarcely so much so. Assuming, then, that such a fact did happen at some very early period of the world's history after the dispersion from Babel, let us now apply to it the well-established principle of transmission by family inheritance. In perfect consistence with each of the three previously adduced cases of congenital variety, we shall assume that at least certain individual members of this strange family inherited the same peculiarities. The question is, how can we account for any special separation of those particular individuals, by means of which they became involuntarily paired off among themselves, and so perpetuated this new variety? What natural causes are capable of being regarded as sufficiently powerful and inevitable to have forced on this issue, and then brought about the establishment of a Negro race?

49. (I.) I think it perfectly possible for this result to have arisen by ACCIDENT.

How far many of those lines of march which marked the primary distribution of our race may have resulted from accidental rather than purposed separations, must remain a secret, I suppose, for ever. That such contingencies, however, arising out of the venturesome habits of some exploring parties, were possible, seems very obvious; moreover, that in lands abounding with thick jungle and forests, these accidental separations were not only possible but probable, appears equally obvious. Providing merely that any such isolated individuals possessed the art of kindling fire, and the use of bows and arrows or other offensive weapons, no valid reason can be given why they should have found the least difficulty either in procuring subsistence or in defending themselves from wild beasts. With the land open before them, and their pathway entirely free from all hostile tribes, the spirit of self-preservation and adventure would have thus been amply sufficient to lead them on toward a settlement in some new and more distant home; from which home, as from a centre, they would naturally disperse in unfettered freedom, according to the geography of the country.

50. These observations apply to all cases. Supposing, however, that the parties, thus early cut off from intercommunication with the rest of their race, had been this very group of persons congenitally born black and woolly-haired. A circum-

stance would then have arisen, actually forcing on the perpetuation of this abnormal variety ; and its isolation from the rest of men would, in a few generations, have quite removed from its own consciousness any feeling of peculiarity. This family, thrown out thus in the forefront of man's geographical distribution over Africa, would of course increase and multiply after its own sort.

51. (II.) TRIBAL QUARRELSOMENESS OR PERSECUTION would have been equally calculated to produce the same results.

No one who is familiar with human nature can object to the probability of our supposing that family disturbances would take place among the early tribes of mankind—disturbances in which strife and violence might force out the weaker party, and turn it adrift upon the world. The conduct of Hagar and Ishmael is a good illustration of this. In the history of primitive settlements there can be little doubt that many such instances of forced separation must have occurred—separations by which families, small at first, subsequently grew into tribes, and, perhaps, distinct varieties of mankind. Now if any one cause could arise better calculated than another to produce such quarrels and persecutions, would it not be found in those personal antipathies and proud jealousies which would inevitably spring up in the midst of a rude and semi-civilized family, where one portion of it would be as abnormal and repulsive to the rest as these black-skinned, woolly-headed members ? A hundred different contingencies might be named as having been likely to bring about this result.

52. (III.) If either of these causes be considered impossible or improbable, there remains another way of accounting for the fact in question, viz., DISEASE.

I have already observed that, in the regions now occupied by the Negroes, there exists a species of malaria which, while it is perfectly innocuous to their constitution, is generally fatal to others. On the supposition, therefore, that the congenital variety, thus physiologically fitted to resist the malaria, appeared among the first batch of early settlers in those particular regions, nothing would be more consistent with the laws of nature than that this exceptional constitution should gradually have become increased and perpetuated, while the original stock became obliterated.

53. We have a curious and valuable illustration of this idea furnished by Professor Huxley's little book previously quoted,* in which he gives an account of the perpetuation of a black race of swine in America, simply induced by the extermination of the white portion of the flock through disease.

* P. 130.

"In the woods of Florida," he remarks, "there are a great many pigs; and it is a curious thing that they are all black, every one of them. Professor Wyman was there some years ago; and on noticing no pigs but these black ones, he asked some of the people how it was that they had no white pigs. The reply was, that in the woods of Florida there was a root which they called the Paint Root; and that if the white pigs were to eat any of it, it had the effect of making their hoofs crack, and they died; but if the black pigs eat any of it, it did not hurt them at all."

54. In this manner, therefore, it is clear that Nature herself becomes capable of supplying certain parts of the animal creation with a principle of selective breeding—a principle which, if applied to the primeval settlers in Negro lands (providing only that the first company which arrived there had brought this congenital family variety along with them), would quite as truly and scientifically account for the exclusive perpetuation of a black-skinned race, as if it had been purposely and artificially brought about by man himself through the principle of methodical selection.

55. If any one should ask me to fix the probable area within which the first black settlement, thus supposed to have originated, actually took root and became a primary centre for Negro dispersion, I should select the district of the White Nile, to the south of Senaar, in which place the Negroes even now speak a language that retains an evidence of Semitic parentage.* Other considerations strengthen this idea. 1st. That spot would be just such an one, in its geographical aspect, as ancient Egypt must have required for keeping up her supply of negro slaves, the river Nile furnishing an obvious and easy course for their transit to the north. 2nd. It would be naturally more in the line of man's original migration from the north-east angle of Africa than the western ranges of Senegambia and Guinea. 3rd. The peopling of those western parts of Negro-land from the eastern side of the continent, is much more probable than the reverse method, inasmuch as even now there is a tendency among some tribes to be on the constant move from east to west. It is common enough, says one traveller, to see Mandingoes inhabiting the low lands of Senegambia; and the light-coloured Fans are beginning to occupy the banks of the Gaboon.† 4th. By supposing the first appearance of this abnormal Negro variety to have been in the spot just indicated, and the gradual extension of it to have been westward in the direction of Lake Tchad, good ground is given us to account for the

* Dr. Latham. Also Latham's *Man and his Migrations*, pp. 140 and 148.

† Reade's *Savage Africa*, p. 512.

present geographical area of the Negro nations proper. For, turning westward toward the table-lands of the Soudan, they would still retain their Negro type, and yet be physically improved by that location, just as we now find their remote descendants to be; while, pushing out further westward, and then following the course of the Niger and its tributaries, and other swampy rivers, they would again have a tendency to degenerate, appearing at last in their most exaggerated typical form, just as we meet with their posterity throughout those parts in the present day.

56. As to any speculations upon the origin of those vaster nations, which appear to come in mainly as a cross between the Negroes proper and the Coptic, Abyssinian, Berber, or other northern races—(I mean the Kaffirs, the Gallas, the Congoes, and the natives of the Mozambique coast, &c.)—this is not the proper time to speak. Suffice it to observe that the inquiry, although subtle and complicated, is deeply interesting; nor is it without an indirect bearing on the present question, inasmuch as most of the West Africa idioms are, in the main, allied to the Berber on the one side and to the Kaffir language on the other.*

57. I offer these remarks on a difficult subject with much diffidence, yet with considerable confidence, believing that, while they are only based upon mere possibilities and probabilities, drawn from the laws of analogy and induction, and offer no actual demonstration or positive proof of the theory I design them to enforce, they are, nevertheless, worthy of attention, and will serve, in some measure, as a useful contribution towards the solution of our proposed problem. It is not in the nature of the case that any *absolute* proof of a theory on this question can be established. The whole discussion is a mere inquiry into the balance of reasonable probabilities; and therefore those who believe in the origin of the Negro race by means of a separate creation, or of miraculous judgment (and, I may add, of development from the monkey) must, of course, undertake to show that there are insuperable scientific difficulties in the way of the theory here advocated. I believe one object of the Victoria Institute is to show that those who are firm believers in the inspiration of the records of Scripture are not debarred thereby from prosecuting their researches into any branch of scientific inquiry with the utmost fulness and freedom, conscious that, although, as in Galileo's case, their traditional interpretation

* See a note by Mr. Morris, in his edition of Prichard's *Natural History of Man*, vol. i. p. 323.

of Scripture language may sometimes have to be modified, yet the inspired records themselves will ever remain unimpeached by the voice of true philosophy. In this case, then, we are glad to believe that, as the language of Scripture appears unequivocally to propound the unity of the human race, so there is nothing in the language of science which necessarily contradicts it, at all events so far as the origin of the Negro race is concerned.*

58. I trust this inquiry has not been made with any such foregone conclusion as to have hampered honest and candid investigation. Yet it terminates, as might have been expected, by confirming our faith in God's holy word. Such, allow me to add, will always be the last result of calm, patient, and continuous inquiry into truth. Hasty conclusions and imperfect generalizations may sometimes give rise to temporary difficulties and apparent contradictions; but that, in the end, there will be true and perfect harmony between Science and Revelation properly interpreted, I have no more doubt than that the earth and ocean form part of the same globe, or that the moon and earth, diverse as they seem to the eye, are both lighted up by a common sun, and constitute one distinct portion of the same planetary system.

The CHAIRMAN.—It is now my pleasing duty to propose a vote of thanks to the author of this paper; and I am sure you will all cordially join with me in that. I think you will also all agree heartily in almost the last words that fell from Mr. Titcomb, whether we agree with all his paper or not, namely, that we must regard it as a valuable contribution towards the solution of a difficult problem. There are however points in the paper which are certainly open to discussion, and I shall now be glad to hear any remarks which any one may have to offer. Before the discussion commences, however, let me say that I am anxious to see improved habits engendered in our Society. It is now a quarter past nine o'clock, and as I think we ought as a rule to close our meetings at ten, or half-past ten at the latest, I hope those gentlemen who may speak will not waste words, but will avoid repetitions and all irrelevant matter.

Rev. J. MANNERS.—I endorse generally all the remarks which we have heard in reference to this subject, which is a most profound one; and, like all profound subjects, if we revert to simple principles we shall get an elucidation. The key to the problem will be found in some of the last words with which Mr. Titcomb closed his paper. I believe, in fact I am sure—as our chairman has often stated—that between the Scriptures, rightly

* The difficulties supposed to attend the existence of a red race in North-west America are subject to exactly the same kind of reasoning as that which is here given by way of solution of the Negro difficulty.

understood, and science there is no antagonism. Truth is above all, and it will always be found to be so. I see a reason, if I may say so, for all this degeneracy and degradation in the human race. And it appears to me to be in this fact; first, that man, taking him generally, was formed in the image and likeness of the Most High, and then that man, when thus formed, had centred in him all the elements of the universe. All the principles, powers, and properties of the universe were centred in him, and everything therefore that was connected with the inferior order of creation—with the animal world—was in some way or other essentially connected with his being, because he was set to be the ruler over all things, to have dominion over everything which was then created, and he could not have had that dominion without having in him those properties connected with the inferior creation. When he gave names to the different animals he gave them from the distinct powers and properties in them which he knew were there from intuition—I do not say inspiration but intuition. But, passing on, there came an event in which that primal state was lost; and in the loss of that primal state—in what I may call, for want of a better term, that catastrophe—I see the reason for storms, tempests, confusions, declensions and deaths, in every sense of the words. I see how it was that the animals became wild, instead of remaining in their former state. I see also how certain powers and inferior properties which had been latent or concealed until that catastrophe were then brought forth and manifested in the variety of ways and forms in which they now appear. I see also the grand reason why we should come to a state or period of degradation. Take the Scriptural account—Noah and his family, Shem, Ham, and Japhet; these three distinct persons, and I can readily understand how human nature became worse and worse, as in Ham. We need not go very far to have proofs of that; we can see how men may degenerate even in the midst of the most civilized, christianized, and intellectual influences. We can see how men may so thoroughly degenerate as to lose almost all traces of intellectuality, and how they may become completely brutalized notwithstanding all the surroundings which tend to their elevation. I can see from this in what way all these cases of Negroes or other races might have been evolved; and that there is perfect harmony between the words of the Scripture rightly taken and the present manifestations of ethnological science in the earth. I for one beg to thank Mr. Titcomb very much for this most interesting paper, manifesting as it really does the perfect harmony between the words of Scripture and the observations which we make of mankind on the earth. I am perfectly sure that by fully examining this problem we shall arrive at conclusions which are in perfect harmony with the Scriptures.

The CHAIRMAN.—I should be glad if any other remarks which may be offered to the meeting should be addressed more closely to the paper, and not to the general degeneration of mankind, which is not precisely the question before us, although no doubt it includes it. I should also say that not only the members of the Society but strangers who may be present are quite welcome to offer any observations.

Mr. ALEXANDER M'ARTHUR.—I am afraid my remarks will be of that rambling character which our Chairman deprecates ; but the fact is that I did not intend to speak at all upon this occasion. I am sure we must all cordially agree with the vote of thanks which has been passed to Mr. Titcomb for his paper. I think, so far as the Negro race is concerned, that we are all likely to agree with Mr. Titcomb's view, and from what he says, as well as from what we get from other sources of information, we may repudiate the idea of the Negro race having been originally inferior to the white race, either intellectually or physically. That they are inferior at present cannot be doubted, but I think that inferiority may fairly be attributed to adventitious and accidental circumstances—the length of time they have been subjected to bondage, oppression, and slavery, their long exposure to the sun, and other causes. But, on the other hand, we have the fact as stated in this paper, that we have a Negro bishop who is discharging his functions very satisfactorily, and I have myself in America seen and spoken with Negroes who in point of intellectual ability were on an average with a very large class of Europeans, and far superior to many of the labouring and lower classes, either of this country or of Ireland. We know also that in the West India Islands and in other parts of our dominions there are Negroes who have successfully competed with Europeans, and who are now occupying very important and distinguished positions at the bar, in the civil service, and as ministers of religion ; and in all those stations of life displaying very considerable talent and ability. I am not so sure, however, that we have gained much or advanced very far in coming to a solution of this problem as to the origin of the Negro. I think a good many of the quotations and inferences in Mr. Titcomb's paper will bear a double interpretation, and cut two ways. For my own part I cannot see any reason why from the accident of a boy or girl being born black, or a family being born black, you should perpetuate a race, and why those other peculiar cases which have been referred to should not perpetuate a race. I think it would have been quite as natural that you should have had a race of persons with six fingers and six toes, or that you should have had a race with that peculiar porcupine skin spoken of by Mr. Titcomb, as that you should have had a Negro race. I should like to ask, in the event of a single Negro family being born, whether that would be more likely to perpetuate and establish a race than the case referred to in the paper where sixteen sons and five daughters all possessed one peculiar characteristic. I think the same result would be quite as natural in the one case as in the other. Then as to the other peculiarities of the Negro—his woolly hair and black skin—those peculiarities are not confined to the Negro. While some of the Kaffirs in Africa are comparatively light, others are quite as black as any Negro, and they almost all have woolly hair—

The CHAIRMAN.—Almost all ?

Mr. M'ARTHUR.—Almost all, I believe. With regard to the thickness of skull which has been referred to, if you go to India you will find that the natives of that country have skulls which are quite as thick as that of the Negro—

The CHAIRMAN.—Oh no. It is quite the contrary. The Hindoo has a particularly thin skull.

Mr. M'ARTHUR.—All I know is that I have myself seen Hindoos exposed bareheaded for hours together to the most intense heat of the sun. I have seen young men and children, old men and women, without the slightest particle of covering for their heads, exposed in this way for a length of time to an intense heat——

The CHAIRMAN.—That is quite true.

Mr. M'ARTHUR.—And I have been told as a fact by a gentleman who has long resided in India that the skull of a Hindoo is very thick——

The CHAIRMAN.—The truth is just the reverse, and has been established in discussing the climatic argument in the case of the Negro. The argument you have just employed was met by the statement, which was well authenticated, that the natives of India have very thin skulls, and yet are equally able to bear exposure to the sun with the Negro.

Mr. M'ARTHUR.—Well, it is an extraordinary fact that they do bear that exposure so well. As to the influence of climate, the same gentleman who told me this is a member of this Society, and has been for many years a missionary in India. He also tells me that the aboriginal natives of India, who inhabit the higher lands, are invariably comparatively fair, so that just in proportion as you come down south and have a hotter climate and a stronger sun you have the faces darkening. He says again, that some of the Hindoos are particularly fair, while others are entirely black or nearly so, and he also tells me that of the Brahmins, who never intermarry with other castes, some are fair while others are sometimes black, and that, as a rule, the better-class natives, who can afford to live indoors and who are not compelled to undergo exposure, are perfectly fair, whereas those who are constantly exposed to the sun are, in the great majority of cases, and especially in Southern India, almost all dark or black. That shows that climate and exposure has a very powerful effect upon the colour, and also upon the facial character, because there can be no question that we have the latter fact proved in Connemara in Ireland. In my opinion, then, we have very good ground for arguing that peculiarity of a native race, whatever it may be, arises more from the influence of the climate, from long-established savage or semi-savage life, and from the laborious pursuits they have been compelled to engage in than from any of the accidental circumstances referred to by Mr. Titcomb. The one theory is quite as probable as the other. (Hear, hear.)

Rev. S. M. MAYHEW.—I did not come here prepared to discuss this subject. I came simply as a listener; but having been invited, as a stranger, to say a few words, I will endeavour to do so. I saw the other day, I think on Friday evening, in one of the leading newspapers, the assertion that where Scripture and science seem to contradict each other, Scripture was wrong and science was right. But if you take, say the science of geology, and review the former grounds on which its axioms were supposed to be founded some forty or thirty years back, and compare them with the present grounds upon which geology is based, you will find a very striking difference indeed

between them. Generally speaking, I think it may be expressed as a truth, that if scientific people would have but a little patience the apparent discrepancies or disagreements between Scripture and science would disappear. I am sure we shall find in the end that Scripture and science go hand in hand. I am not at all prepared to support and I repudiate the idea of two centres of creation. I quite agree with what Mr. Titcomb has stated as to the origin or the probable origin of the Negro race. A very familiar household event will occur to many of you. It frequently happens in a litter of kittens that one, out of say six young ones, will be of a very marked colour and character quite distinct from the rest. Five of them may be of a brindled or light colour, while the sixth will be entirely black. The same thing is also noticeable in other animals—one in a litter or one of a birth will be of a very marked and decided character, while the others are totally diverse. The same principle might have been borne out in the human family. Suppose there was the sudden appearance of a dark-skinned and peculiarly bony-structured human being, and it is easy to imagine that from that one, exiled most likely from his family, there arose a dark-skinned race. But then at the same time I am not disposed to repudiate and put on one side the fact of the curse pronounced upon Canaan. I take the word of God as meaning what the word of God expresses. (Hear, hear.) Canaan was a debased man—no one could have acted as he did without being a debased man, and I think I shall be borne out, though it is but a supposition, in saying that he would have been exiled from the family of Noah after the exit from the ark. There could have been little communion between Shem and Japhet and Canaan. I think that, exiled from the family of Noah, that preacher of righteousness, his debasing influence would have been perpetuated and increased; and as we know that the principal portion of Africa is peopled by his direct descendants, that mental debasement which was so apparent in Canaan has been perpetuated in his descendants. But there is still another point which must not be lost sight of—that where that mental debasement, even in this city of London, is apparent, there is also an apparent debasement of the structural frame. And now the question is for you to settle and not for me, I have but given you a mere thought which has come across my mind, and it is for wiser heads than mine to follow out that thought—whether the debasement of the Negro may not be traced to that malediction which was pronounced upon Canaan, who was himself a debased man, and whether, consequent on the separation, after the exit from the ark, which took place between the debased on the one side, and the righteous on the other, the debased was not exposed to more debasing influence, and the debased mind showed itself very strongly in a debased frame.

The CHAIRMAN.—As time is pressing, I will make only a few remarks to close the discussion. I am sure we should all have regretted very much if the gentleman who has last spoken had not addressed us. I quite agree with what he has said about the curse of Canaan, for it seems to me to furnish the key to the whole subject. But I must notice the remarks which have been made upon the paper by others in their proper order. The observations

of Mr. Manners were not addressed to the particular question of the Negro, and therefore I shall not occupy your time by dwelling upon them, though I agree with him generally as to the degeneration of mankind. As to what has fallen from Mr. M'Arthur, I quite agree with his conclusions. It is one of the weak points of the paper — if I may say it has any weak points—that the climatic influence is put too much on one side. I think there are many influences which, in all probability, have conduced to the development of the Negro races as we now find them, and that the influence of climate must have been one of those influences. Still, I am also right in asserting that climate alone would not account for the distinctions which exist between the Negro and other black races, for I believe that there are lower races than even the Negro. Some six years ago, Dr. Hunt read a paper "On the Negro's place in Nature," at a meeting of the British Association,—and he was almost hooted on reading it at Newcastle; and in that paper he classed the Negro as holding an intermediate position between six lower races and six higher ones. Among the higher races would be classed the Hindoo, who, however, lives in quite as hot a climate as the Negro, but who is not of so coarse a form or so debased in character. There is this peculiarity between the other lower races and the Negro, which bears strongly on the point with regard to the curse of Canaan, that the other races, instead of being, like the Negro, sold for the purpose of being slaves to the rest of the world, are unfitted for servitude, and would actually die out or pine away under slavery. You cannot make slaves of the American Indians, or perhaps even of the Hindoos, though it would be easier to enslave the Hindoos than the American Indians. It is the same with the barbarous races of Australia. None of these races seem capable, from their nature and characteristics, of being made slaves. Now, I do not at all wish to enter into the emancipation question, but my impression is, that the Negroes were never better off than when kindly treated as slaves, and that the greatest tyrants in the world and hardest taskmasters are the people of their own race. The curse contained in the Scriptures, but which was not at all of the character which Mr. Titcomb seems to attribute to it, stated that they were to be servants or slaves; but there is not a word to indicate that they were to be changed to black. Canaan simply was to be the servant, first to his brethren and then to the family of Shem, and then to Japhet the father of the Gentiles. Now, it is really the fact that the Africans have been the slaves, both of their own people and of other races. The Negro himself is the greatest "slave-driver" in the world; and to be a slave in Africa is the greatest curse to which a man can be subjected. Some writers have said that it was like taking the slaves out of a certain place, and transferring them into Paradise when they were transported from the cruel slavery of their own country to the slave states of America. It is often asked whether we have any instances of a savage being greatly improved and raising himself to a high place in the social scale. Now, though I think we have proof of great mental improvement taking place in isolated cases, still I believe these are only the exceptions which prove the rule, and they go also to show that the curse in the Scrip-

tures should not be taken in too literal a way. The curse was not of the character which Mr. Titcomb attributes to it at all. And it does not follow that every individual of the race of Canaan should be a slave. Indeed, that was not possible, for it is said they were, in the first instance, to be servants of one another, or to their brethren, and therefore some of them must have been masters. Now, we have this fact, that there was a race subjected to a curse, not to be made black, but to be made servants; and if time would admit of it, I could cite from Col. Hamilton Smith's *History of the Human Species*, many illustrations of the Negro's particular adaptability for that condition. The same testimony is given by Professor Waitz, the late professor of Philosophy in the University of Marburg, in his work on Anthropology. We have also the fact stated there contrasting the thickness of the skull of the Negro and the thin skull of the Hindoo; and it is also stated that the Negro's skin ought not always to be considered so black as Mr. Titcomb seems to think and we generally take it to be. Then, again, we get the most modern opinion about the Negro and his adaptability to slavery from Mr. Anthony Trollope, who travelled in America a few years ago, and whose opinion is in perfect accordance with that of all ethnologists. He says :—

“Give them their liberty, starting them well in the world at what expense you please, and at the end of six months they will come back upon your hands for the means of support. Everything must be done for them; they expect food, clothes, and instruction as to every simple act of life, as do children.”

I have mentioned these facts because, before we go into the question of the origin of the Negro, we should have an idea of his characteristics apart from his black skin, woolly hair, prognathous formation of the cranium, and thick hard skull. All moral characteristics are much more important than merely physical ones; and when Mr. M'Arthur says that the Negro originally was not intellectually inferior to other races, I should reply—Very likely not; but if we take his father as being Ham, the Son of Noah, unquestionably, whatever may have been his intellectual equality with his brethren, there can be no doubt that he was morally debased and inferior. It is an important question that is brought before us when we take up such a solemn subject as a curse in Scripture; and I should like to clear away thoroughly all misunderstanding respecting it. In the first place, we must recollect that this curse in Scripture, whatever its nature, is not a curse pronounced by the Almighty on any human being. After the Flood, we know it is written that “God blessed Noah and his sons”; and what is called “the curse of Ham” was a judgment, or, perhaps, rather almost a prophecy pronounced by Noah himself in consequence of the graceless and disgraceful conduct of Ham towards him. But I do not look upon that as a curse blighting the whole future of that race of mankind. It seems rather that Noah, seeing the debased character of the man in that abominable act of irreverence towards his father, pronounced that such a character was only fit to be inferior, and to be

a servant of servants. He saw the obscene nature and meanness of the race, and it is astonishing that, though we have hoped to see the Negroes elevated, still the testimony of all history, both past and present, is that these men have generally still very much of the character of Ham. They have a debased, sensual, and graceless character. They sell their very children now, without any scruple, and debase them, not as in the exceptional cases, which occur among degraded people of our own race, but as a characteristic habit of the people. When we see these extraordinary characteristics, we are bound to face the facts. I agree with Mr. Titcomb that it is not the least likely that Ham was suddenly converted into a black man, but I do think it likely that he was a black or very swarthy man before. At all events, his eldest son was called *Cush*, which means black in Hebrew; and we know that names were naturally given in those days according to the habits and characteristics of individuals, just as it once was in our own country, though we now usually inherit the names of our ancestors. We know that originally (especially if they were great men) they derived their names from their characteristics, as in the case of Longimanus, Rufus, &c. Well, as Ham's son was called Cush, that makes it probable that he was a black man, but there is nothing to lead us to think that the curse of slavery had anything to do with that. That may have been merely a coincidence; and how Mr. Titcomb should think that mere accidental causes should be so influential in human affairs I cannot at all understand. No doubt many accidental things occur in the world; but they relate rather to the episodes than to the epics of life. Providence does not allow mere accident or chance to prevail. Nor do I think that disease should be dwelt upon with so much emphasis. And discarding these, we are left, then, with one other simple explanation of the origin of the black race. If we suppose Ham and Cush to have been black men, cast out from Noah's family, or slinking away from very shame after Ham's conduct to his father, then I think it probable that here we have the whole key to Mr. Titcomb's theory, for he himself puts tribal quarrelsomeness, or persecution, as one of the causes of segregation. But I want to know what is the greatest cause of family jars if not irreverence? In the family of Noah a son behaves abominably and is cast out from his family. If you suppose that he was a black man—and the name of his son gives you almost a proof of its probability—you have the very first elements of what Mr. Titcomb wishes for the solution of his problem. You get a swarthy family separated, in the early stages of the world, from all others; they breed in and in and go south, and the climatic influence adds to their peculiar distinctions; their debasement of character and immorality also naturally go on increasing; they become more and more debased; and following the degradation of their morals you find that the degradation of their intellect will also result. I consider that an elevated character, whatever a man may be after he has acquired intelligence, has for its turning-point mainly the moral principle and regard to the higher principles of right and wrong. When you have a debased morality you will have eventually, not always, perhaps, in the individual, but in the race, debased descendants. They indulge their

passions, and that will even give you the element of disease, but not in the accidental way in which Mr. Titcomb seems to think it came about. Then in considering the curse it is not to be supposed that it was so universal in its application as that any exception would be sufficient to refute it. On the contrary, exception is necessary; for we have this principle on the authority of another part of Scripture, that "the curse, causeless, shall not come." Therefore, we may be sure with regard to a whole race, that a curse is never pronounced of so rigidly universal a character, without allowing any opportunity of reversing it. Remember that particular curse in the second Commandment, though it declares that all, unto the third and fourth generation of those who hate God, are under the curse, adds that He will show mercy unto thousands of them that love Him. I do not see anything more miraculous in this particular Scriptural curse of Canaan than is contained in the curse of the fifth Commandment:—"Honour thy father and mother, that thy days may be long in the land." It is true that, as some maintain, that may have had a special application to the Jews inhabiting a particular territory, but I believe it has also a higher sense; and I believe that all things in the Scriptures have not only a particular bearing in the instances where they occur, but that there is a general truth also at the bottom of them. And so these curses are only fulfilled because they do *not* come by accident or through arbitrariness, but are founded upon eternal principles of justice. The curse of Ham came upon him in consequence of his self-debased nature and moral deterioration, and I cannot attribute that to accident, he being a free-willed creature. Mr. Titcomb has made an unfortunate mistake in alluding to the curse as he has done. I quite agree with him as to the absurdity of what he has now put forward, as this curse—

MR. TITCOMB.—You are aware that it has before been put forward by some persons?

THE CHAIRMAN.—I never heard it before from any author of credit, and it never entered my own head as the meaning of Scripture. I have heard many discussions and read many books on Anthropology and Ethnology, and I never met with it in one of them. Professor Macdonald did state it in a weak paper read in this Institute. But because some one puts forward a particularly foolish thing with regard to the Scriptures, are we therefore bound to accept it? In the Scriptures the words are, "Cursed be Canaan, a servant of servants shall he be unto his brethren. Blessed be the Lord God of Shem; and Canaan shall be his servant"; and "God shall enlarge Japheth and he shall dwell in the tents of Shem; and Canaan shall be his servant." It is, in fact, the history of the world in epitome! But still, remember that that is not the curse of God Almighty. After the Flood God blessed Noah and his sons, and you know that the Hebrew is so indefinite with regard to the verbs, that the passage containing the curse of Ham may be merely a declaration of what Noah foresaw, and may be fairly interpreted as meaning, "This is the character you have displayed towards me, and this will be the result, that you will not rise, but sink morally and become inferior." Mr. Titcomb winds up his paper with an allusion to the case of

Galileo, but I must say, considering what we have recorded in our *Journal of Transactions*, he should hardly have done that, because at our first meeting, when Mr. Warington read his paper on the differences between Scripture and science, I went into the question as raised by Mr. C. W. Goodwin in *Essays and Reviews*, which attributed to the Scriptures the statement that the earth did not move, and proved that that was not true. The 93rd and 96th Psalms refer to the world of people, not to the physical world at all; for the word used in the Hebrew is *tevel*, not *aretz*. In the 99th Psalm you actually have the words, "Let the earth be moved." I am not going to accept so childish an interpretation as this——

MR. TITCOMB.—That used to be the traditional interpretation.

THE CHAIRMAN.—I do not know about that——

MR. TITCOMB.—We had to modify our interpretation in consequence of Galileo's discoveries.

THE CHAIRMAN.—I am not aware of that——

MR. TITCOMB.—Oh yes; because Galileo was at first abused as heretical.

THE CHAIRMAN.—When you speak of "we," I object to your falling back on what was done by a particular Pope, or anybody else, and giving that a general application. If some people read the words in the Psalms improperly that is a bad argument, and should be rejected. I deny any universal tradition of the kind; and you must not make too much even of Galileo's persecution, from this circumstance, that Copernicus published his book at the instance of a cardinal, and he was ridiculed in the theatres and out of doors, but that had nothing to do with the traditional interpretation of Scripture among competent authorities. But we should not let human interpretations get mixed up with the Scriptures——

MR. TITCOMB.—That is the very point I made.

THE CHAIRMAN.—But I deny the tradition, or that it was founded on Scripture——

MR. TITCOMB.—But you cannot do it.

THE CHAIRMAN.—Well, I hold to the context, and to the actual word being *tevel*, and not *aretz*. At all events, we must not let ourselves be frightened away from what the Scripture does say, because people have erroneously made it say stupid things. It certainly says not a word about the material world either turning round or standing still. (Hear, hear.)

MR. CROFT.—I hope you will allow me, as a visitor, to take advantage of your courtesy, and say a word or two. My first regret at the termination of Mr. Titcomb's paper was that we had not an opportunity of thinking the subject over and discussing it on another occasion. The subject is one which requires careful thinking over. It might be supposed that a gentleman like myself, whose study is anatomy, would have the whole subject at his finger's ends, but I have found so much else to study, that really I have scarcely reached this yet. We have, I think, rather lost sight of this fact, that the Negro does not necessarily represent the dark races. I will not go into the question of the curse, for it does not seem to me that even what Mr. Titcomb has said has implied the operation of the curse. The question before

us is what is the origin of that particular part of the dark race represented by the Negro, and I must confess that as I followed Mr. Titcomb's arguments he has brought me to the same conclusion as himself. He seems to have cut away, right and left, all other arguments, and to have left us only this one conclusion. I do not say that I am prepared to hold by it, but it seems to me at the present time, and without being able to think it over carefully, to be the one that a careful thinker would arrive at. Mr. Titcomb has had an opportunity of studying the question in a way which very few of us have had, and I should like to give my tribute of admiration to him for the preparation of the paper, and the courage he has had in bringing the subject forward. With regard to the relative thickness of the Negro and Hindoo skulls, I can confirm the observation of the Chairman that the Hindoo skulls are usually very thin indeed.

The CHAIRMAN.—I must explain that we sometimes have adjourned discussions, but I do not think it is very desirable to have them as a rule. After a paper has been read and an interval has elapsed, people forget the subject, and, besides, we generally consider the paper of more consequence than the discussion. We also print the papers beforehand, and send copies of them to any one who is likely to speak. Had I known Mr. Croft would have been here to-night, I would have sent a copy to him.

Mr. MAYHEW.—May I be allowed a word of explanation? I was not disposed to repudiate the force of the Divine malediction on Canaan. I think I do not misquote you, sir, when I say that you looked upon the curse as the mere words of Noah. Noah, I think you said, foresaw the debased state of his son?

The CHAIRMAN.—We can scarcely prolong the discussion now. But what I said was that I did not think we had grounds for considering it a Divine malediction. I only used the words of Scripture, that Noah said so-and-so, and pointed out that God blessed Noah and his sons, but I did not venture to say absolutely that he merely foresaw the debased state of his son, though I think that very probable.

Mr. MAYHEW.—But was not the second member of the sentence a prophecy, and may we not take the first member in that sense also?

The CHAIRMAN.—Oh yes. That is what I said. But my meaning, I think, will be seen quite plainly when the report of this discussion appears in print. I must now call on Mr. Titcomb to reply.

Mr. TITCOMB.—I am sorry that the discussion on this subject has degenerated into a talk about the curse, which has nothing to do with the subject. The curse of Canaan was, in my judgment, confined to the Canaanites, upon whom it fell, and whose history up to their extermination by the Israelites we have recorded. To suppose that the curse extends to all Canaan's descendants to the end of time is to controvert facts. Who were those descendants? Among them were the Copts and the ancient Egyptians, who were in no way a class of people with an adaptability to slavery——

The CHAIRMAN.—If they are the children of Canaan, and their brethren are slaves to them, it would rather confirm my view and what Scripture says,

that one part of the children of Canaan were servants to another part. And then I did not suppose the curse to continue to the end of time.

Mr. TITCOMB.—I do not think there is any force in the last part of your observation. The whole argument you brought forward was that the curse fell upon Canaan, and that through Canaan it is to be traced in the Nigritian family because they have an adaptability to slavery which the other races of men have not. If that is your argument it is worth nothing, because the Negroes are merely the smallest subsection of Canaan's descendants. The Phœnicians and the Copts are among those descendants, and they were not black. (Hear, hear.) The whole subject appears to me only worthy of being dismissed at once. It is taking a part for the whole, and dealing with it imperfectly and unscientifically as though it were the whole. I think the remarks which are most worthy of being noticed, are those about my alleged deficiency of argument touching the climatic cause of variation in the human family. It was held by Mr. M'Arthur that a northern climate produced fair races, and a southern climate dark ones. That is no doubt true; and in that section of my paper which deals with the influence of climate, I adduced a large number of instances where climate did operate considerably in that way, but where its influence is not so great as to produce the intense black variety of the Negro race. With regard to the Negroes the argument fails utterly. The influence of climate is traceable here and there: of course in the north of Europe we have fair races and in the south darker ones, but I anticipated that objection, by the 'very striking, and, as I tried to make it, trenchant remark that in the country of the Senegal you have a Moorish or fair race on one side of the river, and an intensely black race on the other side. These different races you have on the two banks of the same river; showing that the difference is constitutional and physical, and that it has nothing in the world to do with climate. That, I think, settles the whole question. Another objection was made to the effect that Kaffirs had woolly hair. Well, that is no argument against me, because the Kaffirs are a sub-variety of the Negro race, and what you prove in reference to the Negroes themselves you only prove *à fortiori* of the Kaffirs as an offshoot of the Negroes. No wonder they have the same peculiarity. To show that they are an offshoot of the Negro race you need only note the linguistic argument. I am correct when I say that the Negro or West African idioms are reproduced in many respects among the Kaffirs. I said in my paper that the West African dialects stand midway between the Berber on the one side, and the Kaffir language on the other side, showing a unity or homogeneousness of race throughout. The only other argument is this: why an abnormal race like the Negro should be perpetuated and not a race of people with six fingers and six toes. I thought I had answered that, by stating that although anything in the nature of a malformation might be transmitted, it would have a tendency to obliterate or eradicate itself from its very monstrosity. But I showed that in the early period of the world, when accidents caused great separations of families, quarrels and disease may also have separated them; and I showed by analogy, from Professor Huxley's case of the pigs in the Florida woods,

that such things may have given rise to an unwilling but inevitable separation from the parent stock, so that a black race may have been thus perpetuated at once *nolens volens*. Only grant that such a thing was possible, and the thing is solved. It is a supposition consistent with truth both morally and scientifically. I will not occupy your time longer, but I must confess that the discussion—you will perhaps think me as obstinate as the pigs I spoke of—has left me more confirmed than I was before of the truth of my view. (Hear, hear.) I am thankful to those of my friends who have said anything in favour of my paper.

The meeting was then adjourned.

ORDINARY MEETING, JANUARY 17, 1870.

THE REV. WALTER MITCHELL, M.A., VICE-PRESIDENT, IN THE
CHAIR.

The minutes of the last meeting were read and confirmed.

The following election was then announced :—

ASSOCIATE, 1ST CLASS.—Rev. Robinson Scott, D.D., Belfast.

Also the following presentations of books for the Library :—

- “Regeneration viewed in Connection with Baptism, &c.” By Robert Brown.
From the Author.
- “An Exposition of the Parable of the Sower.” By the same. *Ditto.*
- “An Exposition of Hebrews vi. 4–8.” By the same. *Ditto.*
- “The Preaching of the Gospel.” By the same. *Ditto.*
- “Ritualism at Barton-on-Humber.” By the same. *Ditto.*
- “Gospel Truths.” By the same. *Ditto.*
- “Babylonianism.” By the same. *Ditto.*
- “Jesuitism.” By the same. *Ditto.*
- “Letters of Miss Frances Rolleston of Keswick, Author of ‘Mazzaroth,’ &c.”
Edited by Caroline Dent. *From Miss Dent, per J. Reddie, Esq., Hon. Sec.*
- “Mazzaroth ; or, the Constellations.” By F. Rolleston. *From the same.*
- “Metrical Versions of Early Hebrew Poetry.” By F. Rolleston.
From the same.
- “London Quarterly Review,” January, 1870.
From Alex. McArthur, Esq. M.V.I.
- “Thoughts on Life Science.” By Benj. Place.
From Rev. Edwd. Thring, M.A.

The following paper was then read by the Rev. C. A. Row :—

ON THE TESTIMONY OF PHILOSOPHY TO CHRISTIANITY AS A MORAL AND SPIRITUAL REVELATION. By the Rev. C. A. Row, M.A., M.V.I.

1. **T**HIS paper is intended to be closely related to the one which I had the honour of reading to this Society during the last session. Until the principles which I then laid down have been shown to be false, I shall assume them to be true. It will be remembered, that one of these was that, to invalidate a revelation on the ground that errors can be found in the vehicle containing it, it is necessary that those errors should affect the special subject matter of the revelation itself, and not be merely accessaries to its essence, or external to its great aim and object, and belonging merely to the mode of its communication. Errors, however, which are inherent in the special truths which the alleged revelation professes to communicate, are destructive of its claims to have come down from Heaven. It is evident that whatever other subject matter may be found in the Christian Scriptures, they make a special claim that they were designed to enlighten men on points spiritual and moral. If, therefore, philosophy can prove their teaching on these subjects to be erroneous, the conclusion cannot be evaded, either that philosophy is wrong and Christianity right, or that philosophy is true and Christianity false. It becomes, therefore, an inquiry, the importance of which it is hardly possible to exaggerate, what is the nature of the testimony which philosophy bears to the moral and spiritual aspects of Christianity. I mention these two terms in conjunction because, although I am well aware that the words moral and spiritual are often opposed to one another in common religious language, I am unable to see how they are to be separated in fact; and I wish it to be observed, in the course of this paper, that if I use one separately I always mean it to include the other.

2. My inquiry is intended not to be theological, but strictly

philosophical. On the province of theology proper I do not intend to trespass. I intend not to proceed a step beyond the bounds of a strictly rational inquiry. If theology embraces subjects beyond the legitimate limits of reason, I shall not attempt to enter on them. I purpose to consider the subject by the light of reason and philosophy alone. I am careful to state this, that no one may mistake the standpoint which I occupy in this paper.

3. The popular idea of moral philosophy is, that its function is to determine a complete code of human duties, and that one portion of it involves us in the endless mazes of the philosophy of casuistry. Most persons, if asked what was the end and aim of this science, would show, by the vagueness of their answers, that a greater ignorance prevails of its objects than of almost any other subject of human knowledge. Perhaps the general impression would be, that its proper function is to reply to the question, what is duty, and to enable us to apply this general knowledge to particular cases as they arise. Reflection, however, ought speedily to convince us, that even if this were its proper function, it is impossible to give an adequate solution of this question without descending to far profounder subjects of inquiry. It is impossible to separate the analysis of morality in man from the investigation of those forces which act on his moral and spiritual nature. If these are to be successfully analyzed, an inquiry into the relation in which they stand to reason is inevitable. As all moral actions are affected by the circumstances under which they are performed, the attempt to embrace them under a system of rules is one to which no definite limits can be assigned, and must end in disappointment. Nothing is more destructive of vitality of action than the attempt to regulate all possible acts by a definite code of laws. The reason of this is, that the form of morality in man to which his nature ultimately points is, not the creation of a moral machine capable of grinding out certain results with the precision of the working of a mill, but the production of a self-acting voluntary power, which is capable of being a law unto itself.

4. It would give a more correct idea of the aims of this science if it were described as that whose proper function is to analyze the entire active powers of the mind, to ascertain their proper function, the forces by which they are quickened into energy, and the causes of their misdirection and corruption.

5. Such a science ought to be no more confounded with metaphysics than any other. There is no science in existence which does not run up into metaphysical questions; but each

science rests on a basis of its own, which is quite independent of speculative philosophy. The sciences, as such, are founded on a body of facts, which are facts relatively to us, whatever speculative view we may take of their metaphysical character. Their function is the analysis of these facts, and this they accomplish quite independently of any higher metaphysic which examines the substratum of the facts themselves.

6. In a similar manner the science which, in conformity with usage I must designate that of moral philosophy, though I should prefer to call it the science of the active principles in man, rests on a basis of facts which exist independently of the metaphysic which underlies the foundation of these facts. There are four sources from whence they are derived—our self-consciousness and its testimony, our moral and spiritual nature, the history of man in the records of the past, the entire facts of his present experience, and the record of his thoughts, feelings, and ideas, as they have been unconsciously embedded in the structure and development of language. Out of these it has to evolve the nature and character of our moral and spiritual perceptions, their relations to our intellectual powers, the moral and spiritual forces which act upon us, the great principles of human obligation, and the means by which man can be made better or worse.

7. If this be a correct view of its functions, it is obvious that of all human sciences, it has the most direct bearing on the great question of a divine revelation. The science itself extends over a wider field than revelation; while it occupies a large portion of common ground. As far as revelation deals with man's activities, it must form a legitimate subject of the cognizance of such a science, and as far as it has affected man's moral life as it is recorded in history, the laws of its action are a proper subject for its investigation.

8. I assume, therefore, that the existence of a philosophy such as I have been speaking of is possible, and that the nature of the testimony which it bears to the discoveries of a revelation is of a most important character. If the conclusions of such a philosophy, founded on pure grounds of reason, are confirmatory of the discoveries of an alleged revelation, the union of this testimony with the independent attestation given to the revelation itself forms a most commanding evidence on which to test a conviction of its truth.

9. But here an objection will be raised against me, as has been done against similar views. Is not the concession of the possible existence of such a philosophy a death-blow to the claims of a revelation? If man can discover for himself, why

reveal? Does it not involve the whole question, Is a moral revelation possible? I answer, first, that the concession of the existence of such a philosophy by no means involves the concession that it either has discovered or can discover all that it is necessary for man to know, or that it is capable of enforcing its discoveries by such an amount of evidence as to impart a sufficient moral force to the active principles of the mind. Secondly, that after a revelation has been communicated it may become the subject of a sound philosophy, although its disclosures may have transcended the powers of philosophy to discover prior to its communication. Thirdly, assuming Christianity to be a divine revelation, its action on the mind of man has become a fact in the history of our race, and consequently its *modus operandi* as an historic fact has become a legitimate subject of philosophy. Let it be observed that there is no necessity that such a philosophy should be able to give a full account of its *modus operandi* to render its testimony important. Precisely as in other philosophies, it may run up into points which transcend the powers of the mind fully to analyze. The other objections, such as those of Mr. F. Newman, that the concession of the existence of an original intuitive power in man, whereby he is capable of perceiving moral truth, and of erecting a philosophy upon it, renders the idea of a moral revelation an absurdity—are so intrinsically irrational, that it is useless to waste your time on any prolonged investigation of the subject. It is evident that Mr. Newman thinks he has a moral revelation of some kind to make to mankind on points on which he considers himself more enlightened than they are, otherwise he would not have taken the trouble to write his books. He believes that the philosophy of which I have spoken is a possible one, and that he can impart an additional light on the subject to others. In the words of his opponent, Mr. Rogers, he can only vindicate his position by the assumption of the monstrous proposition, that the things which are possible to man are impossible to God.

10. I now proceed to the direct subjects of inquiry—1st. Are the teachings of philosophy, as far as they have extended, in agreement with the moral and spiritual revelation made by Christianity? 2ndly. Are the objections which have been urged by certain philosophical systems capable of substantiation?

11. As there is an ambiguity in the expression, “the moral law,” it will be necessary, before proceeding further, to define the sense in which I intend to use it. Moral law may mean either the great principles of moral obligation, obedience to

which man feels to be a duty ; or a moral code of duties, more or less perfectly elaborated, enforced with the sanction of law, and demanding a literal obedience. When I wish to express the former meaning, I shall use the term, "the moral law"; when the latter, I shall designate it "a moral code."

12. My first position is that philosophy has determined that man has a moral nature, capable of recognizing moral responsibility, accompanied with a sense of duty which, although it may vary in degree, is never entirely absent. Unless he possessed this, all revelation would be impossible. In proof of this proposition, it will be only necessary to refer to the papers of Dr. Irons, and to assume that he has demonstrated its truth until his reasonings have been proved to be unsound. I shall only make one additional observation. The contrary position is in direct opposition to the testimony of every language which has been spoken by man, and if it could be assumed as true, it would be necessary that every language under heaven should be reconstructed ; for it is impossible to express the views of my opponents in human language, without either altering the meaning of its terms or doing violence to its fundamental forms of thought. If the terms of language constitute a record of the universal experience of mankind, they yield a testimony, the force of which it is impossible to evade, that the whole human race have recognized the existence of the principle of duty or obligation, if not in an elevated, at any rate in a modified form. Let it be observed, that revelation never attempts to prove responsibility. It takes for granted that man feels himself to be a responsible agent, and that this knowledge exists independently of revelation.

13. Assuming the principle of responsibility in man, his ability to discover a moral law of some sort is a necessary deduction from it. The moral law which he recognizes may be extremely imperfect ; but his recognition of obligation of some kind is no theory, but a fact, to the existence of which all history and all language testify. In examining the facts with which she has to deal, philosophy freely admits that the standard of moral obligation which the bulk of mankind have actually recognized has been one of striking imperfection. It has varied greatly in different ages and countries. Its obligations may have been bounded within the narrowest limits, but within them they have been felt to be duties. The investigation of the causes of this, and the reconciliation of it with man's possession of intuitive moral perceptions, lies beyond the limits which can be assigned to this paper. Philosophy also, no less distinctly, recognizes the fact that whether

the moral standard be an elevated or a degraded one, man has always possessed principles in his nature which have impelled him to a course of action in violation of that law which he has yet recognized as binding. The facts are facts of history.

14. An imperfection in his knowledge of the moral law places man in a very different position from an imperfection in any other kind of knowledge. A man may hold a false or imperfect theory of astronomy, or geology, or music, without having the most important interests of his daily life compromised thereby. But an imperfect or false conception of the moral law compromises the very purpose of his being. An imperfect moral law stands to the spiritual world in the same relation as an imperfect law of gravitation would to the physical; *i.e.*, both would produce confusion in proportion to their imperfection.

15. In like manner, as a question of fact, and apart from all theory, philosophy has recognized that the superior reason or enlightenment of a small portion of mankind has enabled them to recognize a moral law of a far more elevated character than that acknowledged by the majority. Let it be observed, however, that no reasoner, however perfect, has elaborated a complete moral law, or a body of ethical doctrine. One has recognized one elevated truth, and one another; but as far as existing materials enable us to judge, the reason of no one man has enabled him to attain to the entire moral law of Christianity as a comprehensive whole. It is even questionable whether, in any writing composed independently of all Christian influences, we can discover a full enunciation of the precept, "Thou shalt love thy neighbour as thyself," although we can unquestionably find approximations to it. What has been accomplished is, that different philosophers at different times, and as parts of entirely differing systems, have evolved detached portions of the ethical system of Christianity. But it should also be carefully observed that these detached portions of the Christian moral law are often intimately united with foreign and even hostile elements, which greatly qualify the character of the principles themselves. However nearly many moral precepts found in the writings of Stoics and in the Christian Scriptures may agree in words, it is impossible rightly to estimate their real character without considering them not merely as separate moral aphorisms, but in relation to the entire system, ethical and theological, with which these are connected.

16. Philosophy has also distinctly recognized another fact of the highest importance in reference to our inquiry. However high may have been the standard of obligation, which a

few elevated minds have admitted theoretically, they have found their enforcement even on themselves a matter of the greatest difficulty. They have admitted the existence of a multitude of appetites and passions which vehemently struggled against the voice of reason, and which it was unable to restrain. They were unanimous in their despair of being able to commend their own lofty principles to the reason of the masses of mankind, or to provide any means except that of external coercive force, which would be capable of restraining their passions. It is not too much to say that the whole tone of philosophy, with respect to the possibility of the moral elevation of the masses, prior to the appearance of Christianity, is one loud wail of despair. Philosophy concerned herself only with the upper ten thousand, and even here contemplated the position of things with bated breath.—In every inquiry into man's moral constitution, there are three questions which require to be determined. First, what is the essential character and extent of moral obligation; secondly, how is it to be commended to the reason of the masses; thirdly, what are the forces by which the moral law, when recognized as obligatory, can be endowed with such a vitality as to enable it to become the regulating principle of human life. Christianity proclaims her ability to solve all these questions. What says Philosophy? Could she solve them? If not, does she give a favourable judgment on the solutions of Christianity, or the contrary?

17. In questions of this description, the only certain mode of determining what man can accomplish is by carefully ascertaining what he has actually effected. We have no data for arguing the point on mere abstract grounds; and the attempt to do so must land us in the regions of the clouds. If the issue be between Christianity and philosophy, the only safe mode of reasoning must be to ascertain what has been effected independently of Christian influences.

18. To the first question the experience of the past returns an answer tolerably distinct. It is an unquestionable fact that mankind, by a majority so overwhelming as to render the exceptions, even if they exist at all, of no appreciable value, has recognized principles of moral obligation, though they may have been imperfect both in their character and extent. Also it is clear, that, however elevated may have been the moral law, which has been accepted by individual philosophers, each has felt that his system has had so much of imperfection, and that the principles on which it rested have participated so largely in uncertainty, that he would have gladly hailed the

communication of any amount of additional light. So far as philosophy has entered on these subjects, it returns an answer in favour of Christianity with no ambiguous voice.

19. On the second subject the experience of the past enables us to return a most definite answer. However the principles of an elevated moral law may have commended themselves to an individual philosopher, he felt himself powerless to demonstrate them by such convincing reasonings as could carry persuasion to inferior minds, that they were the principles which ought to regulate human life. One or two philosophers may have approximated to a doctrine of the universal brotherhood of mankind, but the hint of it fell dead on the exclusive selfishness of the masses.

20. On the third and more important point, the testimony of the past is of a still more decisive character. The most elevated moralist was fully conscious that he possessed no moral force of sufficient potency to enforce the moral law, the obligation of which he recognized, even on himself. This philosophy has admitted in terms of the most definite character. The philosopher felt within him the presence of an antagonistic force which he earnestly sought a power capable of coercing ; and, although he tried many expedients, he found it not. The lower portions of his nature stood out in rebellion against the higher ones. With forces inadequate to enforce the moral law, even on himself, as regards the millions of mankind he felt himself utterly powerless. With respect to them, let it never be forgotten that the voice of ancient philosophy is one of hopeless despair, and that the doctrine of the ultimate and gradual perfectibility of mankind has only found a place in philosophic systems since Christianity has appeared. One fact is worth a thousand theories. Not only was this despair broadly expressed by ancient philosophy ; but the thought of preaching his own elevated system of morality to the vulgar, and enforcing it on them, never occurred as a possibility to any of the philosophers, and would have only provoked a smile. The nearest approach to an attempt to do so is the case of Socrates ; but his real efforts were directed to collecting around him a number of the most gifted youths. The only hope which philosophy could suggest with respect to the vulgar was in political legislation. If the public could be only persuaded to entrust the entire reconstruction of society into her hands, she would institute a system of training by the aid of the coercive power, and try to exert the power of habituation in favour of virtue. The views of the philosopher, however, were modest, for he only proposed to try this experiment in a small republic, on the Grecian model, con-

sisting of a few thousand citizens. He even considered that the presence of large multitudes would be fatal to the success of his experiment. The result with which his efforts would have been attended will remain for ever in those regions where to guessers all things are possible ; for, alas ! the public never could be persuaded to commit the reconstruction of any state, great or small, into his hands.

21. Nothing is more easy, now that a great light has come, than to assert that everything which it has disclosed could have been found out without its aid, if only sufficient time had been given for the human mind to operate in. A certain class of thinkers, when they get into a difficulty, at once draw a cheque upon the bank of eternity, and offer it in payment, as though it were a rational solution of it. I submit that this is guessing, and not reasoning. A plain fact meets us, and it requires explanation. The voice of history asserts that philosophers had not discovered a perfect moral law, and were destitute of a moral force adequate to make that which they recognized an actuality. This is a testimony of philosophy in favour of Christianity ; and it is no answer to reply that, with the aid of an indefinite period of time, philosophy might have discovered everything which Christianity has disclosed. It is impossible to disprove that, with the aid of unlimited time, the meanest of the human race may not hereafter be endowed with faculties, compared with which those of Newton were childish. But it is equally impossible to prove it. Whenever men wish to prove that chance has been the evolver of all things, the bank of unlimited time is the ready refuge of the destitute. On this subject the voice of Buddhism is deeply impressive. I know that there are disputes as to the precise meaning of its doctrine of annihilation. But at any rate, absorption must carry with it the destruction of man's personal being. It is a fact, worthy of attentive meditation, that millions of our race have accepted the hope of this as a veritable Gospel of good news.

22. For the purposes of my argument I am entitled to assume the existence of Christianity as a fact, and to reason upon it as such. I now proceed to inquire whether philosophy recognizes that it has satisfied this last great want of mankind, by providing a force which can make the moral law an actuality ; whether it supplies an illumination of which men were previously destitute ; and whether the morals which it teaches, and the forces which it calls into exercise, will stand the test of a sound philosophy.* It has been frequently urged against

* It may be desirable to state, that by the term "moral force," as employed throughout this paper, is meant any or all of those powers in man which are capable of impelling him to action.

Christianity, that it contains no new discovery in morals. If this can be established, I admit that it is fatal to its pretensions as a revelation. The idea of a moral and spiritual revelation which contains nothing new, is self-contradictory. To the premises, however, I put in the strongest demurrer. It is also objected that it is not a perfect moral revelation. Relatively to man and his condition, I think that philosophy must admit that it is an adequate one. But even if the objection were admitted to be true, the denial that it is a revelation at all is not a legitimate conclusion from the premiss. God's revelations may be no less progressive than his works, and be made in reference to special conditions of human progress.

23. We must inquire what philosophy actually effected, and into the nature of the forces at her command. It is impossible to deny that between the time of Socrates and the Christian era no subject of philosophic thought was more earnestly discussed than the principles of morality and its obligations. They were handled with the utmost freedom of thought. However philosophers may have been hindered by prejudice from making progress in other departments of science, it had no influence here. There was no moral position, not even the most fundamental, even those lying at the very roots of human society, which philosophy did not call in question, and ask to show a rational ground for their existence. The results stand out conspicuous. I have already alluded to their general character. They were imperfect; but, as far as they went, are confirmatory of the moral law as enunciated by Christianity. The progress which was made in the discovery of a moral power, which could be brought to bear either on the individual or the masses, was almost nil. Traces were discovered of the manner in which such a force must act, if it could be brought to light; but the force itself evaded the powers of research which philosophy had at her command.

24. The limits within which the philosopher thought that he could exert a beneficial influence were narrow, and proclaim the imperfection of the instrumentality at his command. He required a large substratum of goodness to begin with. He could only act on those whose habits were comparatively unformed. He desiderated more than average intellectual power. The moral forces at his command were much weaker than, with our modern habits of thought, we should have expected. The whole course of philosophic inquiry had opened a wide gulf between morality and religion. The result of the application of rational principles to the popular religions convinced him that they rested on no foundation of evidence. He might occasionally vouchsafe them a kind of patronage;

but it was the patronage of scepticism and contempt, as valuable instruments for imposing on the folly of the vulgar, who were too degraded to be capable of worshipping in the temple of truth. A moral influence, founded on falsehood, must have been both weak and degrading; but to himself, and to minds of corresponding elevation, the popular religious notions had become utterly powerless. Nor did he succeed in discovering more elevated or influential ones in the place of those which he had justly discarded. In the first place, he was unable to discover evidence which could make the belief in the immortality of man a rational conviction. All his reasonings in favour of a belief in a future state were encumbered with innumerable difficulties, and probably no one was more fully aware of their inconclusiveness than himself. Even when he was disposed to admit it on speculative principles, his doctrine of immortality was so closely connected with pantheism as to deprive it of all moral force. If man be a portion of deity or evolved out of the divine nature, or if evil be inherent in matter, what becomes of responsibility? Even when he held a belief in the existence of God, his conception of Him contains scarcely an element of personality; and where this is wanting, the moral force of the idea approximates to zero. A deity conceived of as an *anima mundi*, or as coincident with nature, or as pure intellect, or as invested with attributes bearing no analogy to the moral nature of man, or as existing in a *pleroma* remote from the universe, is no moral force which can be brought to bear on our spiritual being. The philosopher, therefore, lost all hold on the unseen world as a power to act on man's moral nature. As far as man was responsible, he was only so to himself, or to society, or to an impersonality called the order of nature. The only moral forces with which he could act on the mind were those which can be derived from the nature of virtue itself and its influence on our present happiness. If he adopted the intuitionist theory of our moral sentiments, he could only urge that holiness ought to be practised because it was right, and that self-sacrifice was a duty because of its inherent nobleness. But what if the mind failed to recognize this? Even when it recognized it, there stood in hostile array a mighty force of passion. How was this power to be overcome? In whatever form he presented the conception, whether as right reason, or the morally beautiful, or the subject of praise, or the nobility of self-sacrifice, its moral force was substantially the same. If he adopted utilitarian views of morality, the only force which he could bring to bear on the mind was the only one on which virtue, under that system, can be made to rest, that virtuous practice is the course best suited to conduce to the happiness of the

individual. The denier of intuitional powers of moral perception always has, and ever will be, compelled to centre the entire moral force by which virtue can be enforced on pure deductions of the intellect acting on the single principle of self-love, and, according to it, bad logic, must necessarily result in bad morality. But what if he thought otherwise? Against this conviction there arose before him, not a speculation, but a lamentable fact,—that which has tried even the patience of the holiest men in every age,—the prosperity of the wicked and the sufferings of the good. Such principles, surrounded by doubt and uncertainty, could form no moral force capable of overbalancing the might of the passions. Doubtless, the philosopher had much to say on the importance of subjugating them, and tried many devices for accomplishing it. Stoicism was the highest ideal of the deification of human nature, and wielded with the utmost force all the resources which philosophy held at its command; but even the most exalted speculator must have felt that the moral force with which he was acquainted was unable to effect the object of the Stoic philosophy, which may be not incorrectly described in a single sentence,—the elevation of a man into a god. Experience testified that to talk about virtue is easy; to practise it is hard. Of this, the philosophers were deeply conscious.

25. If such was the insufficiency of the moral forces when they were brought to act on the select few, they were totally inadequate to grapple with a state of corruption and confirmed vice. To enable these forces to act at all, it is necessary that the mind to which they are applied should be capable of appreciating them, and that they should bear some proportion to those arrayed in opposition to them. If a sense of the beauty of virtue is to become a moral force, the mind must be capable of perceiving its beauty, and that to such a degree as to overbalance the weight of the contrary principles. But how was this possible when the internal powers of spiritual vision had become corrupted, or the principle of self-control weakened? Philosophy also fully recognized the tendency of a state of moral degradation to become more intense, both on society and the individual, until the moral principles became absolutely darkened. But when corruption had once set in, she had no forces which were able to arrest its progress. The philosopher viewed his mission as being as nearly as may be the opposite to that which our Lord asserted to be the special object of His. While our Lord came not to call the righteous but sinners to repentance, the philosopher, as a spiritual physician, found that his medicines were possessed of efficacy only in the case of those who were comparatively sound.

26. But there is one moral force which we have not yet

considered, but which requires a careful examination,—the principle of habit. This was the most powerful force with which the philosopher was acquainted. It is, beyond all doubt, one of the mightiest which can be brought to act on human nature. But it is one of a peculiar character. It resembles the lever, which can only bring its power into active operation when it has a fulcrum on which to rest. With a suitable one it can move a world; without one it can lift nothing. So it is with the principle of habituation as a spiritual power. Philosophy recognizes its existence. But to make it efficacious for the reformation of mankind, it requires a moral fulcrum on which to rest. That was precisely the thing which philosophy could not find, and which Christianity asserts that it has discovered.

27. The influence of habit on the condition of mankind is one of tremendous might. By its action on men in large masses it may be said to have made them what they are, and it is the most powerful influence which has been brought to bear on the individual. Man is born into a particular state of thought and feeling. Under its influences his character is usually formed. In that character, for the most part, he develops himself, grows to maturity, and dies. Even the most powerful minds which have succeeded in breaking through the conditions of their birth only imperfectly succeed in detaching themselves from the present and the past. If we each of us were to examine how much of our feelings and principles of action we owe to ourselves, and how much is the creation of habit, we should find the latter greatly to preponderate. Whatever changes can be effected by the aid of the principle of habituation, let it be observed, that from the nature of the case they must be of extremely gradual operation. Under the action of this principle, movement unquestionably exists in the moral world; but it resembles that of a glacier. Its characteristic is slowness, and its reality can only be discerned when it is measured after the lapse of considerable intervals of time. Causes have existed in modern society which have imparted to it a more rapid movement than in ancient times. Among the chief of these has been Christianity, which has introduced a new mode of acting on the minds of men, as we shall consider presently. But the only mighty influence with which philosophy was acquainted, which was capable of effecting improvements in the moral and spiritual condition of mankind, was, as I have said, that of habituation. For the most part, however, this power was in the hands of her enemies. Hence the intense desire of the philosopher to create an ideal state. While his ideal state never became

an actual one, let us not forget that Christianity has created the Christian Church, thereby realizing an idea which philosophers saw only in mental vision. So far the testimony of philosophy to Christianity is unmistakable.

28. To enable us to estimate the full force of this testimony, we must briefly investigate the mode in which this mighty power acts on mankind. What is the result of repeated acts? Each time an action is performed, its repetition becomes more easy. But this is only one portion of the force which it exerts. Repeated action impresses a definite character on our moral nature. The cause of this lies deep beyond our ken; but we know as fact that the performance of good actions deepens the principles of goodness, and the performance of bad ones imparts an additional vigour to those of vice. Language also, in the manner in which it is learned by man, impresses on him the ideas, feelings, and sentiments of the past. In the act of learning it, they gradually become incorporated into our moral and spiritual being. We think after a particular type, and it becomes impressed on our intellect; we act thus, and similar are the results on our hearts. The counteracting power is the intellect. It is the only influence through which great changes in our moral and spiritual being can be effected.

29. Nothing has a stronger tendency than the existence of this power to preserve a virtuous society in the principles of virtue, if such a condition can only be once established. It is one also hardly less influential on the individual. When he is good and surrounded by good influences, it will be a most powerful instrument to preserve him in this state. But when the moral atmosphere has become vitiated, it becomes the most formidable obstacle to the improvement of mankind. What was to be done? Habituation was the philosophic lever, but where was the fulcrum? The philosopher had no truth to tell the masses which, by any power of evidence, could produce deep conviction in their understandings. Under the influence of habit alone, it was evident that mankind must go on in their old groove. The philosopher saw one way only of preventing this. If an external coercive force could be created which could supply a vantage-ground for the principle of habituation, something might be done. Philosophers might become the magistrates of a new state, where the practice of what was unhallowed should be proscribed by law, from which unorthodox poets and other corrupters of mankind should be excluded, and a training-school for virtue instituted. This philosophy proclaimed as the only means of regenerating society with which she was acquainted. The difficulty was, that whatever it might look

in theory, it was nothing till it could be set a-working, and work it would not.

30. But we must contemplate habit as a moral force acting on the individual. In one point of view it works at an advantage on society. Societies live through protracted periods of time. A power with indefinite time at its command, however slowly it may work in the changes which it produces, may in time effect considerable revolutions. But individuals live to-day and die to-morrow, and unless a moral force can be brought to bear on them which is rapid in its operation, it is impossible that one who has sunk into confirmed vice, and whose moral and spiritual vision has become darkened, should be changed into a virtuous character.

31. Let us consider the nature of the moral power which the philosopher could bring to bear on the individual through the agency of habit. As I have already pointed out, the first obstacle which he had to encounter arose from the manner in which the present and the past had entwined themselves with his being. He was unable to commence operations on him as on a *tabula rasa*. There had been imprinted on his being the whole influence of the past; and the moral and spiritual atmosphere with which he was surrounded was the only one which he had to breathe. The philosopher had either a state of moral corruption or of imperfect self-command to begin with. Even where the voice of reason was audible, against its dictates stood in fierce array the violence of the passions. How, then, was the work of habituating men to virtue to be begun? The reply, of course, would be, you will become virtuous by doing virtuous actions. But how was a man to do virtuous actions, when the eyes of his moral perceptions were perhaps darkened, or the violence of his passions were impelling him to vice? To use a very ordinary illustration: while the grass was growing, the horse was starving; and before it could become sufficiently high for him to feed on, he died. The power of habit to create virtuous principles would be slow under the most favourable conditions, even if there had been no passions to contend against; but against their violence it was nearly impotent. Habit is an admirable power, but it requires a virtuous state of morals to commence its operations with before it can exert influences for good. The only power which can supply such an influence, as we shall see hereafter, is conviction or faith, and without it it is nearly powerless. Where virtuous principles do not exist in some force, habit will confirm vicious tendencies instead of creating virtuous ones.

32. It was not therefore without reason that the most enlightened thinkers took refuge from the despair occasioned by

the contemplation of the present in speculation. They had no sufficient faith in their ideal or in the forces at their command to induce them to exert themselves to make it become the actual. Hence the unpractical character of all ancient philosophy. Still I maintain that the philosophers were right in their general principles, nor has the utmost extension of philosophy in modern times succeeded in invalidating them. They felt, and felt truly, that although a mighty moral power existed in the principle of habituation, the necessary conditions of its action to make it capable of reforming mankind were wanting, and that all other moral forces were inadequate to resist the energy of the principles which impel men to evil. The only other principle with which they were acquainted was that of pure reason, but they took a most imperfect view of its nature. With them reason was nearly coincident with pure intellect. They saw that reason had some relation to the moral nature of man, but their views respecting it were imperfect. Their divisions of man's intellectual and moral being were founded on arbitrary principles, and frequently split him up into as many distinct entities. Hence it was very difficult to bring it to bear as a force capable of influencing the moral nature of man. When she left the regions of pure intellect, her voice was uncertain. She produced no powerful convictions on subjects capable of acting on our moral being. On such points she cried, in despair, "What is truth?" Until truth assumes the form of a conviction it is incapable of stirring the depths of the inmost recesses of our spiritual nature.

33. But Christianity appeared and declared herself to be in possession of a new moral force, by means of which the good could be strengthened in their goodness, those who possessed an imperfect power of self-control could be delivered from the tyranny of the passions, and a new life could be infused into those who were morally corrupt. In a word, she proclaimed herself capable of doing those very things which the philosopher admitted that he did most imperfectly, or that he was incapable of accomplishing. She not only speculated, but proceeded to put her plan of action into execution. In her peculiar language she designated the spiritual power by which she acted on mankind by the word "faith." What has philosophy to say as to her principle and *modus operandi*? I answer that, as far as her testimony reaches, it is certainly in her favour.

34. It may be objected that I am going to enter on subjects too sacred for philosophical discussion, which are within the province of theology, and not of philosophy. There are not

wanting those who will say that the mode in which Christianity acts on the mind of man cannot be reduced to the forms of philosophic thought. I readily admit that there are subjects in Christianity which transcend the limits of human thought to trace to their utmost depths. Some ultimate principles must be assumed or received as axiomatic. But this is no peculiarity of Christianity. It is common to it with every other subject of human thought. The refusal to submit our religious convictions to rational inquiry must end in a disastrous result—the belief that they will not endure such inquiry. If reason be denounced, I ask what are we going to substitute in its stead? It will, perhaps, be answered, faith. I answer, what is faith except another name for reason, exerting itself as a certain definite subject matter? Is it a mental conviction, or is it not? If it has some foundation on which it rests, it must be either a rational one or nothing. It may be said to be an intuitive perception. I answer that an intuitive perception is a rational conviction. If one man asserts that he has intuitive perceptions of which others are destitute, he cannot expect that they will accept them as verities on his unsupported assertion. If he wishes others to believe, he must adduce evidence; and he can only do this by appealing to reason. Some say that faith is a peculiar mental process, and that its essence is a reception of truth on authority. I reply, the admission that it is a mental process proves it to be a rational act, and that it is necessary that the terms of that which is proposed as an object of faith must be capable of comprehension by reason; and the authority on which assent is supposed to rest must be capable of approving itself to our reason. But as to the objection itself, it is evident that, as far as Christianity is an influence which exists in and exerts a power over the moral world, and constitutes one of its facts, it falls within the legitimate province of philosophy to examine its nature and the mode in which it is exerted. There may be lacunæ over which philosophy can erect no bridge. This happens in many other subjects of human thought, and does not hinder our philosophy, as far as it goes, from being real. It will be a great advantage if philosophy can be made to point out where these lacunæ, which lie beyond her powers to investigate, are to be found. I hope to point out one or two such in the sequel. What I contend for is, that as far as Christianity exhibits a power which influences mightily the springs of human action, and is brought to bear on man's outward life, her *modus operandi* is a proper subject of philosophical investigation; and if philosophy determines that it is in con-

formity with our highest reason, her testimony is confirmatory of the truth of the Christian faith. The question whether philosophy has been able to discover all that Christianity has revealed may be directly answered in the negative. But this does not prove that it is not her duty to take cognizance of it, or that she is not able to afford us powerful assistance in determining whether it is a true light or a fictitious one.

35. I have made these observations, lest any one should suppose that I deny the existence of an inward spiritual influence, the laws of the action of which philosophy may be unable to trace. Our philosophy may be a true philosophy as far as it goes, although it may be unable to penetrate to the profundities of things, in the same manner as our natural science may be perfectly true, although it cannot give the rationale of the principle of life. One thing it ought to be able to accomplish: if a lacuna exists, it may point out where it is to be found, and thereby confer on us an inestimable service.

36. I shall assume that that which distinguishes Christianity from all previous systems of moral teaching is the prominence which it assigns to the principle of faith as a power which is alone capable of effecting the regeneration of mankind; that it is the great instrument which it employs for that purpose; and that it is the mode by which the good man is to be strengthened in his goodness; and the morally corrupt is to be rescued from his corruption.

37. What, then, is faith? No little confusion of thought prevails, both in popular philosophical and theological language, respecting the character of those mental phenomena, of which the term is the current designation. Philosophers have not unfrequently used language which implies that there is a radical distinction between those convictions which are designated by the word faith, and those which we arrive at by the instrumentality of reason. It has even been represented as possible to yield assent by faith where it is impossible to do so by reason. Some have gone so far as to designate by faith a class of truths of which, while we are unable to image to our minds a distinct conception, we are yet capable of believing in, by some peculiar mental power which they call faith. On the other hand, popular, and not unfrequently theological language, describes the incomprehensible as being the peculiar object matter of faith. Others restrict it to truths of which the evidence is imperfect; while others go to the extent of saying, that the smaller the evidence is, the greater is the necessity and the merit of believing. Equally strong

is the tendency in such persons to represent the objects of faith, and the truths which we may be said to know, as mutually opposed to one another.

38. It seems to me that these and kindred distinctions are purely arbitrary, and point to no one fact in man's mental constitution. A searching analysis will prove that faith is the final act of all our mental processes, of which the search after truth is the object. Such a search must terminate in a conviction, and I am unable to understand in what it differs from an act of faith. In some cases we call the act a conviction, and in others faith, according to the subject matter; but this makes no real difference in the mental states themselves. Faith also, or conviction, accompanies every act of the mind by which it yields assent to our intuitions. It is the act of recognizing them as true, and forms the ground on which we conclude that they are realities, whether they be intuitions purely intellectual, intuitions connected with our moral nature, or those which lead us to trust in the perceptions of the senses as true, or the objects of the passions as desirable. Again, in all questions in which reason is involved, the final act is a conviction of or belief in the truth of the conclusion. This conviction is faith. It may vary through every degree of intensity; but it is founded on our reason. The subject matter on which it operates may be either demonstrative or contingent, but still a conviction is the result. If we are dealing with moral evidence, the force of it may approximate to the certainty of pure demonstration, or amount only to a low probability, and the strength of the conviction will vary accordingly. Of this kind are all those beliefs which are dependent on testimony; but the processes through which we arrive at them have their foundation in our reason, and therefore it is absurd to talk of an opposition between the conclusions of reason and of faith. Our belief in testimony rests on grounds which are purely rational, and every step of the process must be tested by reason. Faith has been often spoken of, as if it were identical with trust, and as such opposed to reason. Trust, however, is a conviction only differing from others in the nature of the subject matter. We trust, because we think that the object of trust is worthy of confidence. To this we can only attain by rational processes. If our trust is founded on anything opposed to these, such as prejudice, and anything which will not endure a rational inquiry, it is a mere chance if it is not entirely misplaced. Unless a man is prepared to assert that his belief or trust is founded on a direct inspiration, the basis on which it is founded must be either a rational

one or simple prejudice. It follows, therefore, that whenever the mind is in a state of active inquiry after truth, its various processes end in a common result,—a conviction, or belief.

39. Faith and knowledge have been often contrasted as mental acts. As far as I am aware, such contrast is nowhere made in the New Testament; nor can I see that it is consistent with any principle of sound philosophy. The former is a term of wider extent than the latter; but can it be said that an act of faith does not accompany every act of knowledge? Our intuitions are all subjects of knowledge, and all strict deductions from pure axioms are of the same character. Can it be said that we do not exercise faith or belief in our intuitive perceptions? I have the firmest belief that the whole is greater than its part. The processes by which I arrive at the conviction that Charlemagne once existed, and that some of the actions ascribed to him are facts, and others myths, are very different from mathematical deductions; but they may be quite as powerful to produce conviction. They are essentially rational and rest ultimately on principles, which are more or less of the nature of intuitions. The only valid distinction is not in the rational character of the process, but in the subject matter. It follows, therefore, that conviction is the final result of the whole of our mental processes which are involved in the search after truth; the term faith is more usually restricted to those convictions which have a decided bearing on our moral and spiritual being. The same line of reasoning will prove that there is no such distinction between those beliefs which we accept on testimony, and our other convictions, as to render it necessary that we should refer them to a distinct class of mental phenomena. When we believe in testimony, we believe because we think that it is supported by adequate evidence; that the person on whose testimony we rely is veracious, and that he possesses ample means of information. Our judgment may be bad, but this is a defect which may be common to every rational act. Here, however, it is necessary to keep carefully before us the distinction between unintelligible propositions and truths lying beyond the reach of our faculties to establish. Inattention to this distinction has been a fruitful source of error. It is a mere delusion to think that we believe in the former; all that we can do is to say that we assent to them. But a belief in the latter, if sufficiently attested, is highly rational. It may be beyond the reach of our powers, *e. g.*, to demonstrate the truth of a future state. But it is an act in the highest degree rational, to believe it on the testimony of one who must know the truth respecting it, *i. e.*, God.

40. It should be observed that all assents yielded by the mind are not convictions; and consequently that mere assents to truths are not acts of faith. I therefore define belief or conviction as the final stage of every rational act of a mind which is engaged in a search for truth. I add this latter clause because it involves the distinction between a dead faith, which is a mere assent, and a living one, which is a conviction. In the one case the mind is in a passive, and in the other in an active state. This distinction is of the utmost importance; and it is unphilosophical to confound two such distinct classes of mental phenomena under a common term. A large body of truths to which mankind give assent when they are not founded on prejudices which are mistaken for intuitions, are purely traditional, and are founded neither on evidence nor insight. Such assents are, for the most part, passive states of the mind, and are not convictions. Others approximate to the character of convictions when they are founded on prejudices which mental ignorance mistakes for intuitions. I will mention one instance of this. Multitudes of ignorant people think that it is a duty to believe, without inquiry, what their fathers believed before them. Such beliefs have frequently existed with sufficient force to have produced most disastrous consequences.

41. A large number of the assents of mankind are founded on a different principle, and one of which the complete analysis is not easy. They are the result of inclination or general tendency of mind, and therefore are of a character more or less intuitional; and they frequently settle down into positive convictions. Certain beliefs possess affinities with others to which the mind has already given its assent. This is what we call bias,—a principle which lies deep in our mental constitution. Let us take an illustration from politics. Two opposite tendencies of mind greatly influence men's convictions on this subject,—the one a tendency to conservatism, and the other a tendency to progress. A multitude of kindred beliefs are embraced for no other reason than their connection with this or that line of thought. A large number of religious and moral convictions are essentially of this description, and rest on a basis which is supposed to be intuitional, but which the mind diligently seeking after truth is bound reverently to question.

42. The whole of our beliefs divide themselves into two great classes,—one whose basis is purely intellectual; the other which, while the belief is an act of our reason, is directly connected with our moral and spiritual being. These beliefs constitute forces which act with various degrees of power on

our moral and spiritual nature. As the great subject of the Christian revelation is spiritual and moral truth, it is to this portion of our beliefs that the term faith is usually applied in Scripture. It is through this portion of our convictions that Christianity professes to exert a mighty influence on our moral and spiritual being, by bringing before us objects suited to generate them, or kindle them into a new vitality. Through them she calls into being a power which is capable of confirming the holy in their holiness, of restoring the power of self-command in those in whom it has been weakened, of rescuing the degraded from their degradation, and of kindling a spiritual and moral vitality in those in whom it was previously dormant. What has philosophy to say as to her method of procedure?

43. I answer, that as far as it goes, her reply is decidedly favourable, and that the method adopted by Christianity will stand the closest tests of rational inquiry. The voice of philosophical inquiry points to one conclusion—that if man is to be acted on for good, it is only possible to do so by introducing a light into his understanding. Such was the conclusion of pre-Christian philosophy, and all subsequent research confirms its truth. We have seen that the ordinary moral and spiritual forces at the command of philosophy, even when aided by the power of habituation, were wholly unable to recall a man from a state of moral and spiritual corruption to holiness, or, to adopt ordinary language, from vice to virtue. Philosophy again and again admitted her weakness to deal with what she considered even the higher classes of minds. No words can express the helpless condition to which she consigned the miserable and degraded. Her only hope of acting on the elect of mankind was through the intellect. She attempted to act by it with her utmost power. Her mistake was that she attempted to base her moral forces on purely intellectual convictions, instead of those having a direct bearing on the affections and the heart. Her method was right, but the forces at her command inadequate. The authors of Christianity have entered on a course which the philosophers saw only in dim outline; or, to use a phrase borrowed from her language, of that which they saw in the faintest type, Christianity has produced the complete antitype.

44. Let us give a brief attention to the analysis which philosophy has given of the relation of knowledge to moral action. She determined that in the strict sense of the word knowledge, when it was an active and not a passive principle, *i.e.*, when it exists in the mind with the force of a conviction, it

was impossible to do wrong contrary to its dictates.* This conclusion, however strange it may seem to those who have never considered the subject, is positively true. That state of moral wickedness which Milton has attributed to the devil, when he puts into the mouth of Satan the words, "Evil, be thou my good," is not possible to man as long as he retains his human nature. His constitution compels him to will his own happiness; and he cannot deliberately will his own misery. It is therefore impossible for him to pursue a course of action as long as he retains a clear conviction, in active energy, that it is destructive of his own happiness. It is necessary to destroy the conviction before this evil course can be entered on. The truth of this will be admitted if we carefully analyse what invariably takes place, whenever a temptation is yielded to. The mind plays off a sophism on itself, the inclinations impelling it to do so. It knows that a particular act is wrong. Before it can perform this act, it is necessary either to destroy the conviction or make it become latent. This forms the first step in the process of yielding to temptation. We either persuade ourselves that the act is not so great a violation of the moral law as we took it to be; or that though it may be abstractedly a violation, it is not so under the particular circumstances. We then persuade ourselves that the observance of the moral law is not only not essential to our happiness, but that in restraining us from the particular gratification it is subversive of it. When we have arrived at this stage the act becomes a possibility, but not till then. Let us take as an example the case of a man who yields through temptation to the solicitations of intemperance. He has a conviction that drunkenness is contrary to his well-being. As long as this exists as an active conviction in his mind, he is withheld from the gratification. Such a conviction, in the language of Christianity, is faith. He knows, however, that the particular act will be pleasant. Before he can yield he is compelled to extinguish the conviction by contemplating the pleasure of the particular act. The power of resistance, or the contrary, is determined by the degree in which the conviction or the particular act is contemplated by the mind. The one is the victory of faith, and the other of vice. The strength of the desire acquires additional force by the act of contemplation, until our moral vision becomes darkened, and practises on itself a deliberate act of self-deception.

45. This analysis of temptation, which is strictly in con-

* Such was the conclusion arrived at both by Plato and Aristotle.

formity with the principles of ancient philosophy, proves that the resisting principle in man is a rational one, standing in the closest union with his moral nature, and that the thing necessary to render resistance successful, is to deepen and intensify the force of the conviction. The freedom of man consists in the power possessed by the will to concentrate the attention of the mind on the conviction or the opposing principle. Such a conviction, to render it efficacious, must be in the closest connection with the always true, and an evil line of conduct is only possible when the mind is out of this relation, and causes the conviction to become latent. Human degradation becomes complete when, through reiterated acts of vice, the perception of the obligation of the moral law gradually ceases to exist, or its fulfilment is no longer recognized as conducive to our happiness. This analysis brings us into close contact with a portion of the principle of faith as taught by Christianity, and proves that it is a development of man's rationality. Philosophy recognized its truth, but it wanted a power to create convictions, and to maintain them in a state of activity.

46. But the principle of faith exerts a far wider influence on human nature than that which has been already assigned to it. It is co-extensive in its action with all the activities of man. According to popular views, it is almost entirely confined to subjects connected with religion. Such a view will not stand an analysis of the springs of human action. Language itself testifies to the contrary; for we are constantly compelled to speak of it as extending its influence to things completely secular.

47. When we analyze the springs of human action, we find that all action is invariably grounded on a conviction of some kind. This conviction may be, and is often, false; but without one all action is impossible. It forms the rational part of that which we designate motive. If a man will investigate the nature of his motives, he will find that they are always connected with convictions which are either rational, or which he supposes to be so. A man can only act when he believes that the action is desirable under the circumstances, and he is impelled to action by that belief. This belief differs in nothing which I can discover, from that which the New Testament designates faith, except on the subject matter on which it is exercised; the one being on the palpable realities of this life, the other the unspeakable ones of the spiritual world. What is it which impels man to action? The only reply which can be given is, a conviction, belief, or faith, which are names of the same thing under different modifications. What imparts

intensity to human action? I answer, increased conviction. It may be said that it is desire. Beyond all doubt the affections and desires of our moral nature are the springs of our actions; but they can only impel us to action when a conviction exists in our minds that their objects are attainable, the means of realizing them within our grasp, and that if we succeed in attaining them it will promote our happiness. Some persons allow themselves to talk as if the different parts of man's nature, which we conceive of as distinct in thought, were distinct in fact, and constituted as many separate entities within him. Hence language is habitually used as though man as a moral being, the subject of affections, appetites, and desires, is a distinct being from man as an intellectual and rational one. The truth is that God has so closely compacted together man's moral and intellectual nature, that the one constantly acts and reacts on the other, rendering it a vain attempt to sever what the Creator has indissolubly united. The intellect acts on the affections and the passions, and these react on the intellect.

48. I maintain, therefore, that every action presupposes belief; and this is alike true of the philosopher, the theologian, the merchant, and the mechanic, and that each acts in proportion to the intensity of his beliefs. As far, therefore, as Christianity proposes to act on men through the instrumentality of faith, it extends into the religious world the same principles which govern the active one. In the latter, philosophy cannot help recognizing the power of the principle. So far her testimony is in favour of the application which Christianity makes of it in the former. Where Christianity has advanced beyond philosophy is, that she has formed a plan for the moral and spiritual regeneration of the human race, and created a moral force for that purpose—a thing which philosophy earnestly desiderated, but could not accomplish. Nor has this been a mere speculation. He that formed the plan was convinced that it was a practicable one, and proceeded to put it into execution; and, as it must be allowed even by his opponents, with a marvellous success. The history of nearly nineteen centuries testifies, whatever we may think of Christianity, that it has acted as a moral and spiritual force on the mind of man, with a might compared with which all previous efforts sink into utter insignificance.

49. I shall not be trespassing on grounds which are strictly theological if I enumerate the chief spiritual forces on which the author of Christianity relied for accomplishing the purpose which he had in view. In the first place, he enlisted into his service every moral power with which philosophers were

acquainted, and imparted to them a force derived from his own person, of which they were previously destitute. He invoked the moral force of all things which are true, honest, just, pure, lovely, of good report, of virtue and praise, and of the principle of enlightened self-love, which is inseparable from our being. But in addition to this, he invoked the whole force of the religious principle in man, and brought it to bear as a definite conviction on his moral nature. He discovered the relationship which exists between man and God, thereby imparting a mighty force to the principle of responsibility, and reinforced it by disclosing the fact of his immortality, and that he was himself appointed to be his future judge. A future state was with him not a speculation, but a fact; and he confirmed his teaching respecting it by himself rising from the dead. He also exhibited in his own person the ideal of every perfection, divine and human, and crowned it by surrendering his life for man. By the ideal of goodness, and by every divine and human perfection exhibited in his life and death, he proclaimed himself worthy to seat himself on the throne of the conscience, and to occupy the highest place in the affections; and taught that the most powerful principle of holiness was the steady contemplation of himself. The greatest peculiarity of Christianity is that it professes to centre the affections of man in a living person, that person being an exhibition of the supremest goodness, holiness, and loveliness, and to make him supreme, above every other moral force. If we read the New Testament as we would any ordinary literature, we must admit that this is at least an outline of the method by which the first propagators of Christianity proposed to act on mankind. I do not pretend to give a complete enumeration of all the forces to which they have appealed. By such agencies they have also communicated a more active force to the principle of habituation, and created the Church as the instrument for its application.

50. Such is a general outline of the method adopted by Christianity for the improvement of mankind. Is the testimony which philosophy gives to it favourable, or the reverse?

51. Philosophy fully recognizes the truth that the only mode in which a state of moral corruption can be changed into one of holiness, is by the introduction of an idea into the mind which had no previous existence there. Otherwise things must go on in their old groove. If we wish to divert the course of a river, it is necessary to dig a new bed for it. Conviction is the only force by which such an idea can vindicate to itself a standing-place in our minds, and if the force of opposing passion be great, the conviction must be proportionably deep.

The new conviction awakens corresponding emotions in our moral nature ; and, according to the laws of our mental constitution, generates a variety of kindred conceptions and emotions. The more the idea is contemplated, the greater is the moral force which it acquires. When opposing principles exist, a struggle necessarily arises between the new and the old, each striving to obtain the mastery over our entire moral being. All men who have not sunk into a state of hopeless degradation testify to the reality of this struggle within them. The mode in which good triumphs over evil is by intensifying the depth of the conviction. The principle of habituation aids in intensifying the power. Every time a successful resistance is offered, its moral force is augmented. Christianity, by her revelation of religious truth, has enlisted the whole might of the religious tendencies in man into the service of what is good and holy, thus creating a mighty force, which is brought to bear on our spiritual being, which could not be evoked in the exclusive regions of morality.

52. Let us now briefly analyze the mode in which it is connected with the intuitional powers of the mind. An idea of excellence, producing a firm conviction of truth, is presented to our reason. The rational powers either embrace it or reject it. These are closely connected with certain emotions in our moral being, and are awakened by the ideas presented to the reason. I need hardly observe that this forms the highest aspect of faith as it is exhibited in the New Testament. The ideal of goodness is the divine person of its Lord.

53. The principle is one of extensive application. Between large classes of our ideas and our moral and spiritual affections there is the closest connection. The one mutually awakens and generates the other. The presence of the conception in the intellect calls the affection into play, or awakens it if previously dormant. The more the conception is meditated on, the more powerful is its influence to kindle the affection in the one case or to awaken it in the other. It should be observed here, that if a man is sunk into a state in which a divorce has taken place between rational conviction and moral emotion, and the presence of the conception in the intellect has no tendency to awaken the corresponding affection in the heart, he is fallen into a state of hopeless moral corruption. There are no means of curing such a man by any instrumentality of which philosophy can detect the *modus operandi*. Here she recognizes a lacuna. As the inquiry into this involves nothing of a practical character, it lies outside our present investigation. It is sufficient for our purpose, that such is

not the condition of the great majority of mankind as we meet with them in actual life. Whenever such a condition exists, philosophy at once recognizes that reformation is only possible through the agency of what we must designate a moral miracle, and that it lies entirely beyond the range of any law which it is within her power to trace.

54. Let a new idea or conviction, then, be brought into the mind from a source external to the mind itself. This I assume to be possible in fact. How it is effected lies beyond our present inquiry; and if I were to enter on it, it would involve us in a metaphysical discussion from which it is very doubtful when we should emerge. To render it efficacious for the production of holiness, it is evident that it must involve a higher ideal than that previously existing in the mind. Let the mind meditate on it until it recognizes its reasonableness and its excellence. It will then awaken emotions in our spiritual being capable of revolutionizing it. This is one of the mental conditions which Christianity designates by the term faith.

55. I need hardly say that ancient philosophy made many an effort to realize a high ideal of moral beauty, and taught that the steady contemplation of it, if only it could be attained, was an efficacious means of infusing holiness into the soul. It is no less certain that she utterly failed to create anything analogous to the conception of a Christ, which, if its elaboration be of human origin, is the solitary achievement of the fishermen of Galilee. Yet, if the so-called rationalists are to be believed, notwithstanding the profundity of their philosophic power, and their moral and spiritual elevation, they were the prey of the most unbounded credulity. But the philosophic ideal was a low one when it emerged out of the shadows of mysticism, within which it was too frequently enshrouded, and one not suited to enlist the sympathies of our moral nature—not to say that it was utterly incapable of penetrating to the profundities of our spiritual being. Many of its features violated the fundamental principles of human nature. The loftiest speculations connected with these subjects are to be found in the writings of Plato and of kindred schools. This philosopher fully recognized the importance of contemplating the ideal of goodness as a means of improvement in virtue. But although he maintained the existence of such an ideal, he could only conceive of it in a form so abstract that its moral influence as nearly as possible approximated to zero. The attainment of a view of it by the mass of mankind was absolutely hopeless. It was the ultimate reward of the select disciple, after years devoted to the long and patient

study of philosophy; and even then I am afraid that the view to be attained was a very hazy one. What could come from the contemplation of the *αὐτὸ ἀγαθόν*? In the form in which it was conceived of by him, it was a pure intellectualism, incapable of being presented to the mind in an objective form. I cannot understand how he conceived it possible that man could get a glimpse of it as long as he continued subject to bodily conditions. It was to be found nowhere in the generated or sensible world. It existed only in that of ideas beyond the boundaries of time and space in the regions of eternal truth. Wherever they were situated, or how they were to be scaled, the philosopher either did not teach, or, if he did, it will take us long years before we shall be able to understand his method of arriving at it. Still, however, we have gained a most important point. The general principle of Christianity was admitted and seen in dim vision by philosophy.

56. What philosophers sighed after Christianity has accomplished. What Plato aspired after as the privilege of the choicest of human spirits, Christianity has made the possession of universal man. The philosophers talked of contemplating the *αὐτὸ ἀγαθόν*, or the idea of good, through a remote participation in which the imperfectly good things which are in the world possess their goodness. This ideal was banished to a lofty world of *οὔσiai*, where corruption or generation entered not. Christianity presented Jesus to mankind, a living entity on the theatre of human life. He is its *αὐτὸ ἀγαθόν*, fitted to be contemplated by every member of the human family; and an overwhelming majority of the wisest of mankind have been unanimously of opinion that the essence of perfect goodness shines brightly in his person. In him the philosophic *αὐτὸ ἀγαθόν* has become a reality in the sphere of the changeable and the corruptible; the objective embodiment of the highest idea of goodness; the goodness which can be conceived of as belonging to God, and that which can be imaged as belonging to man. So far, then, I contend that Christianity, as a moral and spiritual revelation, is in accordance with the soundest principles of philosophy. But it transcends them. It is the filling up full, of that of which the highest philosophy only saw the most feeble and most unsubstantial outline.

57. It will, perhaps, be objected that this reasoning presupposes that the moral and spiritual powers of man are able to form a conception of the ideal of goodness; and therefore that any discovery of it from any external source, such as a revelation, is unnecessary. If the mind can recognize the

conception of the ideal of goodness when presented to it, it can create it. This I deny.

58. Let us illustrate this subject by means of one which is sufficiently obvious—the nature of our conceptions of the beautiful, both in nature and in art. All men have ideas of the beautiful, more or less perfect. It matters not for our argument whence they are derived, or how created. It is sufficient that they exist in fact. When an external object is presented to us, by means of these ideas we judge whether it is beautiful or the contrary. We are also capable of recognizing that it has a higher form of beauty than anything with which we were previously acquainted. Let us take as an example the beautiful or magnificent in scenery. A beautiful or magnificent object is presented to the eye. The mind recognizes it as such. The scenery may be of an inferior character. Still it recognizes the beauty or the magnificence which it contains. Out of objects of inferior beauty which have been presented to the eye, it is capable of creating conceptions of a higher perfection than can be found in any one individual object. It effects this by putting together the highest forms which it has seen and rejecting the inferior ones. This forms the art of the painter when he endeavours to embody on his canvas conceptions of ideal beauty. This process, however, can only be carried on within certain limits. The mind, out of the objects of beauty which have been presented to it, may form an ideal more beautiful than any one single reality which it has ever contemplated. But if it has never seen anything but ordinary scenery, it by no means follows that out of such it could create the realities of a Switzerland. Yet it is a fact, that if a Switzerland is presented to the eye it is at once capable of recognizing it as transcending in beauty and magnificence all such objects which it has either previously seen or been capable of conceiving.

59. The same reasoning will hold good if we substitute moral and spiritual goodness for physical beauty. Between them, as far as I can see, the analogy is perfect. Our ability to recognize an object as a high ideal of moral goodness, when it is presented to the mind in an objective form, by no means proves that it is within the power of our subjective conceptions to have created it. The mind recognizes the idea which is presented to it as the realization of that which was existing there in an unconscious or dormant state.

60. This is the cause of all great mental revolutions. Mighty changes in our moral being are caused by the flashing into it of some unknown or previously unrecognized

truth. Light bursts on the mind. It bows before its all-commanding power. It awakens corresponding sympathies in our spiritual being. We discern that our former course of action was wrong. Our feeling of responsibility is intensified by all the forces of religion being brought to bear on it. Our reason contemplates the relationship in which man stands to his Creator. It becomes a conviction. Corresponding emotions are generated in the mind. It contemplates our relationship to God in Christ. The profoundest emotions are generated in the soul. It bows before the image of perfect goodness. At length, in the intensity of conviction, he becomes the centre around which its affections turn. Such are the moral forces employed by Christianity.

61. The case stands thus. Our Lord said, "Sanctify them through thy truth." Philosophy teaches that the only way in which man can be made better is by creating in the mind a firm conviction in conformity with that which is always true. Philosophy produced few deep convictions. Christianity has generated profound ones. Philosophy sighed after an ideal of goodness, but could not create one. Christianity portrayed a Christ, and exhibited on the sphere of life one who stands in solitary grandeur, to whom no subsequent speculation has produced a fellow. Philosophy spent itself on speculations in the schools. Christianity nerved the missionary's arm and sent him into the world. Philosophy looked on the multitude with contempt. Christianity expended on them the resources of her spiritual power. Philosophy placed all her hopes of acting on man for good in the acquisition of a coercive power, but no state would entrust her with the power of legislation. Christianity has not only penetrated to the depth of individual being, but has created a spiritual State, the Christian Church. Philosophy gathered around her a select few. Christianity has influenced the destinies of man. The whole course of history has been modified by her influences. To all these her acts, philosophy, when she tests the deep springs of human actions, affixes the stamp of her approbation, though she was unable to discover them. The investigation of her principles proves that Christianity has produced the antitype of what philosophy saw in type. Is this the work of fishermen and peasants?*

62. But let us suppose that a man is fallen into such a state that when a moral or spiritual idea is introduced into the mind, no corresponding force is kindled in the affections.

* The state of the question as between all previous human thought and Christianity is fully discussed in "The Jesus of the Evangelists."

Here, then, is a great lacuna which philosophy is unable to bridge over. She has no remedy to propose. She can do no more for him than she can for the man on whose eye a ray of light has never shone. Christianity pronounces that unless a divine power is breathed into him from without, she has no remedy which can reach his case. So far both are in agreement. Philosophy recognises the fact of man's power to darken his moral and spiritual affections by repeated acts of vice. Christianity does the same. Philosophy leaves him in that condition. Christianity evokes mighty influences, and brings them to bear on him. She says, "Fear not, only believe."

63. But there is another aspect of this question to which it is necessary that I should advert, but which it is impossible that I should discuss in this paper. I cannot pass it over in silence, lest it should be supposed that I do not assign it an important place in the philosophy of those moral forces which have been evoked by Christianity. She has imparted to the principle of habituation an efficacy as a moral power capable of aiding in the improvement of mankind, to which it was previously a stranger. To use the metaphor which I have already employed, she has supplied it with a fulcrum, by which it is able to act as a powerful lever in the spiritual world. That lever is faith, as the purifying and sanctifying principle of human nature. We have already shown that what habituation wanted was a standing-point on which it could commence its operations. This is supplied by Christianity when she introduces powerful convictions into the mind. The philosopher found the influence of this principle one of the most powerful obstacles to human improvement. Christianity has rendered it a power equally available for good.

64. But this is far from being a full statement of what Christianity has effected. As we have seen, the only hope of a reformation of mankind which the philosopher could bring himself to entertain, was placed by him in the possibility of getting possession of the legislative powers of political society. If he could do this, it afforded him the possibility of using the weight of the principle of habituation as a powerful influence for good. He therefore sighed for the creation of a state in which, by the sanctions of law, he could enforce his own ideal of virtue, and educate men in the practice of it, and coerce the refractory. Now it is impossible to deny that, although the philosophic conception was alloyed with many and great imperfections, it rests on a substantial truth. It is not too much to say, that whatever truth it contained, is fulfilled by Christianity in the creation of the Christian Church

as a great moral and spiritual society, for the purpose of using the principle of habituation in the formation of human character. Under its influence habit reacts on faith and faith on habit, and each strengthens the other as a moral force. The subject is a very tempting one, but I must forbear entering on its further discussion, and content myself with observing that the institution of the Christian Church, as a moral and spiritual society, is in conformity with the teaching of sound philosophy. The more thorough is the investigation, the more strong is the proof that whatever philosophy saw in dim outline, Christianity has realized as a substantial reality.

65. I must now offer a few observations on objections which have been made to particular aspects of the moral teaching of Christianity. It has been urged as an objection, by persons who cannot have carefully considered the question, that it does not contain a complete moral code. The fact that it does not contain a complete one, I admit, and maintain that it was never intended to do so. That the absence of one can be made an objection on any principle of sound philosophy, I deny.

66. A code of morals which will supply a rule of action, in all the complicated relations of life, is as great an impossibility as a coat which will fit every man under all circumstances, or a dress which will be exactly adapted for all seasons and countries. However minute may be the code of morals which is elaborated, the mind of man will go beyond it, and burst the bonds with which it is attempted to be encircled. This is proved by every attempt which has been made to elaborate a system of casuistry which shall determine beforehand the course which duty dictates, under all circumstances, and meet the case of all consciences. With whatever degree of minuteness it may have been elaborated, universal experience has proved that it is necessary to frame one involving finer and finer distinctions, until all inward life expires under the influence of a minute system of hair-splittings, and a burden is imposed on the conscience which is utterly intolerable. The healthiness of moral action consists in the unconsciousness with which great principles are applied to particular cases. In this point of view, there is a striking analogy between our moral and physical nature. The healthiest condition of the latter is when our conscious perception of it is the least. A constant watching of it, and turning our eye inward upon it, is inconsistent with its well-being. So it is with our moral nature. It acts as it ought, when we are content to allow great principles unconsciously to evolve their own result. A

constant probing of them is not only a symptom of disease, but a means of aggravating it. Nothing is more subversive of profound moral convictions, than to be constantly dealing with cases of casuistry.

67. A perception of freedom is inseparable from all healthy moral action. Its true idea is self-sacrifice under a profound sense of obligation. Hence it follows that the only sound condition of moral feeling is when, under the influence of certain great principles of obligation implanted in the conscience, man becomes a law to himself. But the existence of a moral code implies that obligation is contemplated as a mere objective rule, and assumes the form of bare legality, an aspect of moral obligation which stands in distinct opposition to it as a spontaneous act of self-sacrifice. The moment we view obligation as mere hard, definite law, imposed on us by an external power, we convert it from a law of freedom into one of slavery.

68. It follows that a moral law of an elevated character can never be specific in its precepts, or attempt to embrace the whole round of duty. It need not have any specific precepts at all. When it has them, it can only employ them as illustrations of great principles. Thus they are useful as showing the mode in which general principles should be worked out in practice. But a precept being only part of a great objective rule of action, if it stands by itself, and is without reference to the remainder, it is not only incomplete, but very frequently misleading. In all cases it is impossible to get an accurate view of a great system, of which the parts are mutually dependent, without the ability to take a view of it as a complicated whole. A moral law which is suited for a free agent must content itself with dealing with great principles and entrust the working out of details to the healthy action of the mind, in conformity with the ever-varying character of circumstances, which affect the moral character of particular acts.

69. These considerations effectually dispose of objections against Christianity on the ground of alleged omissions of certain duties in her moral teaching. I fully admit the fact that she does not attempt to evolve a moral code, or even a complete system of ethical doctrine. Her omission to do so is her greatest glory. If she had attempted it, she would have stood self-condemned before the tribunal of philosophy. I think that it is true that she does not even attempt to evolve a moral precept in the form of an objective law. Her morality is purely the morality of the spirit, and not of the letter. Her principles are all-embracing, not so her precepts.

If such be her character (and it is one which true philosophy will assent to), it follows that many duties may exist which she has passed over in silence. As a fact, no one can doubt that her precepts, and special embodiments of the great principles of duty are always called forth by particular circumstances; and the idea that she designed to enunciate an abstract code of morals applicable to all time is inconsistent with her structure, her teaching being always fragmentary. If this were not so, it would have been impossible to stop short of the elaboration of a complete moral code and a system of ethical doctrine. To have done the latter would have converted her from a revelation into a philosophy.—I maintain, therefore, that Christianity is philosophically correct: 1st, in the absence in it of a positive code of morals; 2ndly, in being content with laying down the great principles of moral obligation, and presenting to the reason a succession of convictions adequate to impart to them vitality; 3rdly, in allowing the mind which has been penetrated by her principles to become a law to itself.

70. But what with regard to many of the precepts found in the Gospels? Are they intended as definite laws for all time? I answer that such cannot be the intention of even those which are stated in the most absolute terms; because, when they are applied as simple rules of action, they are impossible to be applied in practice; and, what is more, the person who uttered them did not himself so apply them. Nor is it possible that any person could have been so ignorant as to imagine that they were capable of such application, except in an ideal state of human society, where they would be useless, because they would not be required. It is utterly absurd in those who assert that Christianity is of purely human origin, to attribute such stupidity to its author. The more completely human is the origin which we assign to it, the more necessary is it to admit that a profound wisdom superintended its elaboration, unless we are prepared to assert that folly and chance can effect what all the powers of philosophical research have failed to accomplish.

71. These considerations will sufficiently dispose of most of the difficulties which have been urged by Mr. Lecky, in his recent work on "The History of Morals from Augustus to Charlemagne," with respect to some features of the moral teaching of Christianity. In mentioning with disapprobation any portion of this most important work, I think it due to its author to express my concurrence in the larger number of the positions maintained in it, subject to different degrees of qualification. This, in many cases, is absolutely required.

Many of his statements are too broad. It also seems to me that some of his omissions have rendered his treatment of portions of his subject imperfect in breadth of philosophical thought; and from some of his conclusions I entirely dissent. I will select, as an example to which these remarks are applicable, the mode in which he has treated the question of patriotism and Christianity. Let it be understood, however, that I wish to speak of Mr. Lecky's important work with deep respect. It is the product of a mind which is deeply convinced that truth exists, and which evidently seeks to discover it.

72. Mr. Lecky seems to be of opinion that this virtue has received no recognition in Christian ethics. At the same time, he takes a most favourable view of it as it is taught by heathen moralists, and of the place assigned to it in their systems. We must not forget, however, that while he pronounces this censure, he expresses the warmest sympathy with that portion of Christian teaching which sets on a firm basis the principle of the universal brotherhood of mankind. I have selected this special virtue for consideration because, according to the general view of Mr. Mill, and to some of his positive assertions, I apprehend that he maintains that Christianity, taken as a whole, is unfavourable to the existence of the political virtues; and not only so, but that it is only through the elaboration of a type of virtue different in character from that on which Christianity has set the seal of her highest approbation, that the moral improvement of mankind can be effected, and that this is imperatively called for by the wants of modern society.

73. In the first place, I deny that in Mr. Lecky's sense of the term, the New Testament contains a system of ethics, or that it was intended to do so. He uses the words, not in the sense of an elaboration of the great principles of obligation applicable to all circumstances, but very nearly in that of a code of morals, or, at any rate, of a complete system of ethical doctrine. If my view of the moral teaching of Christianity is correct, there is no necessity that the virtue of patriotism should have obtained any distinct recognition in it; and under the special circumstances of the times it was highly desirable that, if noticed at all, the reference to it should have been a very general one. I admit that little or nothing is said in the New Testament directly bearing on it, though a reference to it is not so entirely wanting as Mr. Lecky seems to suppose. Still, there is no attempt to apply the great principles of obligation to this specific virtue, or to enforce it by exhortation. On the contrary, the efforts to restrain and keep in due subordination the principles on which

it rests, when, as was frequently the case in the ancient world, instead of a virtue it became a vice most opposed to that great subject of Christian teaching, the universal brotherhood of mankind, are clear and unmistakable.

74. Secondly, I answer that the patriotism of the ancient world was far from being a pure form of virtue which Christianity could encourage without a large amount of very complicated qualifications. If Christianity had attempted specially to enforce this virtue, it would have been necessary to lay down the qualifications, or her moral teaching would have been in the highest degree misleading. These are so numerous that they would have required a considerable amount of space for their elaboration, and a degree of formal statement utterly alien to its structure. It is a striking confirmation of the view which I take respecting the nature of the precepts of the New Testament, that they are never accompanied with qualifications, without which no precept is directly applicable as a rule of life. It is impossible to assert that patriotism, as it has been generally exhibited in ancient or even in modern times, is a pure unmixed virtue. Equally so is it to deny that the spirit of patriotism has produced a great amount of evil, and that whatever improvement it has displayed in these latter days is due to Christianity itself. I am ready to admit that when we contemplate ancient patriotism in certain aspects, and carefully remove others from our view, it contains an element both grand and noble. The self-sacrifice which it involved possesses a deep fascination in the dreary annals of human selfishness. Still, much of the glory with which it has been invested disappears when it is subjected to a rigid analysis. Self discloses itself as a very predominant feature in it. I will not deny that it may have existed in a few minds in the form of a pure love of country, though this is very doubtful; but in the great majority it consisted in the identification of the life of the individual with that of the state, of which, in the small republics of ancient times, he formed a very appreciable portion. The glory and prosperity of his country was his own. This point is very distinctly brought out in the funeral oration of Pericles, and forms its most striking characteristic. The utmost efforts of the orator are employed in identifying the glory of his country with that of the individual, and the highest point to which he elevates himself is in proving that a speedy death in battle is a small evil compared with the greater good which men enjoy in their country's glory. When states consist of a few thousand citizens, in many respects they resemble a joint-stock company, in which the share of the

individual is large. In proportion to the size of the community the intensity of the feeling of patriotism has always diminished.

75. But if there is a bright side to patriotism, it is impossible to deny that the reverse is a very dark one. In ancient times the patriotism of the citizen meant holding double or treble their number in the bondage of slavery. It meant the sovereignty of the state of which he was a member, and the keeping of all others which he could master in a state of political subjection. It too easily degenerated into devotion to his party, and the trampling his opponents in the dust. In Greece it led to unceasing warfare and desolation. With the Roman it meant the lust of universal empire and universal plunder, and the shedding the blood of the non-citizen like water. Where it took a different form, as in the Jew, it produced contempt for all of an alien race. Even among Christian nations many of its results can only be contemplated with awe. Its spirit has freed men from the sordidness of many of the baser forms of selfishness, by identifying self with the interests of the community. Still it is a principle of which selfishness forms an essential ingredient.

76. If this be correct, it is a principle which is so strong in human nature that it requires no adventitious aid for its support. Mr. Lecky's commendations of this virtue require very considerable qualification; but when he remarks that its gradual extinction in the Roman Empire was coincident with the rapid progress of Christianity, it seems to me that he mistakes a coincidence for a cause. To what was the extinction of Roman patriotism due? I reply, to the enormous extent of the empire itself—to its crushing of the separate nationalities; and in the latter period, when the feeling of patriotism became nearly extinct, to the utter corruption of the Government, which destroyed the interest which the individual had in the state. I will not deny the influence of the principle of asceticism on the final dissolution of the empire. But I must reply that the principle of asceticism forms no portion of New Testament morality. But while Christianity did not enforce this virtue in the direct form of precept, it announced principles exactly suited to counteract its defects. One alone it will be sufficient to quote: "Thou shalt love thy neighbour as thyself;" and it declared that our neighbour was not only our fellow-citizen, or the member of our own political party, or our fellow sectarian, but every brother man who needs mercy at our hands. Paul, the most devoted missionary, was also an ardent patriot in the largest and best sense, free from a single taint of selfishness. While society

was crumbling, she erected a state, the universal Church; and in favour of it she evoked a self-sacrificing devotion which ancient patriotism never equalled. But society has been recreated; and Mr. Lecky cannot deny that many men whose characters have been deeply penetrated by Christianity in modern times have displayed a sublimity of devotion to their country which will bear a most favourable comparison with the greatest examples of it in the ancient world.

77. But it is urged that the teaching of Christianity tends to assign a low place to what, for want of a better name, we must designate the heroic or political type of virtue, if not entirely to ignore it, and in place of it to bring into the greatest prominence the virtues of the milder and more unobtrusive character. These Mr. Lecky, by a singular misnomer, has designated the servile virtues. He owns the importance of her elevation of the latter, but seems to think that she has unduly depreciated the former. Let us investigate how the case actually stands.

78. It is an unquestionable fact that the virtues of the heroic type have occupied the highest place in every ancient system of morals; and as far as virtue has received the homage of mankind, their admiration has been confined to this aspect of it. Some of the milder virtues have received a feeble meed of praise; but to one of them, humility, I do not know that any recognition has been given either in popular or philosophic systems of morality. It is no less remarkable that to these virtues Christianity has assigned the highest place in her spiritual temple.

79. This is a fact demanding the most attentive consideration. The whole current of pagan thought, whether popular or philosophic, I may add, one prominent aspect of Jewish thought, was in favour of the heroic or political aspect of virtue. The most prominent aspect of the Jewish saint is unquestionably formed on the heroic type. Yet, despite of this concurrence of opinion, the authors of Christianity have unhesitatingly assigned the highest place to the milder virtues, and the general judgment of mankind since they have done so has concurred in opinion that they were right. Such a fact is worthy of attentive meditation on the part of those who pronounce the Gospels to be a body of myths invented by boundless credulity.

80. I fully agree with Mr. Lecky, that the high position assigned by Christianity to this class of virtue has had the effect of elevating those portions of society which the dominant classes crushed with an iron tyranny; but I cannot concede that there is anything in the character of mildness, meekness,

humility, compassion, and the whole constellation of similar qualities, which can justify the application to them of the name of the servile virtues. What she does for the slave is to convert him into a spiritual freeman; and, until this is effected, he is incapable of anything which she can recognize as genuine virtue. It cannot be disputed that these virtues exercise an influence on the well-being of mankind, out of all proportion greater than those of the heroic or political type. If the epithet of grand can be applied to the one, that of morally beautiful is the peculiar characteristic of the other. Against these latter it may be truly said, "There is no law;" but this is certainly not true, without great qualification, with respect to the former. When the virtues of the heroic type are separated from the milder ones, and assume the highest place in our mental constitution, they frequently exhibit themselves as splendid vices. I have often been tempted to think that when Aristotle sketched the character of his *μεγαλόψυχος*, or magnanimous man, who is designed to be the embodiment of all the heroic virtues, he intended a kind of parody. He may be described as a portraiture of human greatness, untempered by a particle of mildness, meekness, humility, or love. Every reader instinctively feels, that when the philosopher attempted to depict the character of the great heroic, scarcely leavened as it is by a single trait of the milder virtues, he fell from the sublime into the ridiculous. Later Stoicism somewhat softened the picture. Mr. Lecky says that the stoical conception of virtue exhibited it in the most disinterested form in which it has ever appeared among men. The Stoic, doubtful about the reality of a future state, acted without hope of reward. I think that it might be more correctly stated that, of all the aspects of virtue, that of Stoicism was the most intensely self-conscious.

81. It must be conceded, therefore, that the elevation by Christianity of the milder type of virtue to the highest place in her spiritual temple is justified on the soundest principles of philosophy. The whole constellation of the milder virtues shining, as she exhibits them in their respective places and proportions, is the most perfect manifestation which we can conceive of moral loveliness. The heroic type can only assume the aspect of holiness, when it is in the closest union with the milder virtues.

82. But it will be objected, that while the elevation of the milder type of virtue is strictly philosophical, it may be charged on Christianity that she unduly depresses the heroic one, and that this aspect of virtue occupies a most important place in the constitution of man. I freely admit the im-

portance of the heroic forms of virtue, and I think that I fully appreciate their grandeur. But I deny that this depreciation exists, and assert that the entire objection is owing to the absence of a sound philosophy, which has prevented us from appreciating the character of its teaching.

83. The objection is based on the misapprehension to which I have already alluded, that Christianity professes to elaborate either a complete body of ethical doctrine, or a perfect moral code; and that if circumstances have compelled her to bring one class of virtues into prominence, it amounts to a depreciation of those which are not. Let it be observed that the heroical virtues are those which are pre-eminently suited to flourish on the soil of human nature, and have a tendency to degenerate into vices. Every instinct of man, when he is not a prey to the basest sordidness of selfishness, is in their favour. The contrary is the case with the milder ones. The whole force of the passions runs counter to them. Christianity, therefore, concentrates all its moral force on the side of the weaker power. But it is not true in fact, that the great moral principles which she inculcates are not favourable to the growth of these aspects of virtue, when they are placed in due subordination to those of a milder type. Two of these are sufficient to prove this,—her principle of faith and that of self-sacrifice, which constitute the chief corner-stones of her system of morality. Faith is the very foundation of courage. Without it the virtue cannot exist, except as a mere animal passion. Self-sacrifice occupies the same position in reference to all political virtue. Both together produce the highest forms of nobleness of character. One particular aspect of the principle of faith which she inculcates, not only produces the courage of the martyr, but it forms the highest ground on which to base the calmness of the politician, or the pure elevation of spirit of the hero.

84. Whatever may have been the impelling principle which induced such multitudes of Christians during the fourth and fifth centuries to forsake their duties as citizens, and retire into the desert, it is impossible to justify their conduct either by the spirit or the letter of the moral teaching of the New Testament. I ask, Have not those who have been most completely penetrated by the spirit of Christianity exhibited the political virtues in their highest forms? What single influence had pagan virtue to produce for the amelioration of man's social condition capable of being put in comparison with the spirit of self-sacrifice which the author of Christianity has infused into the breasts of multitudes of men and women? Will the cold abstraction of philanthropy or public spirit ever kindle a

flame of devotion equal in intensity to that which he has succeeded in exciting towards himself, and brought to bear in improving the condition of humanity? Mr. Mill's assertion, that there is a need for a type of virtue to be called into play different from that which is recognized in the New Testament, proves either that he has not meditated with profound attention on the subject of Christian morality, or else that he has viewed it through the spectacles of prejudice.

85. Before I conclude, I must draw attention to that aspect of Christian morality, against which the objection that it is at issue with the principles of philosophy may be urged with the greatest speciousness,—its special teaching on the duty of almsgiving or charity. It has been frequently asserted that its teaching on this subject contradicts the principles of political economy.

86. It is impossible to deny that the teachings of theologians on this portion of Christian morality have been extremely indistinct, and are founded on no consistent principle. They have been far more ardent students of the arcana of dogma, than of the philosophy of morality. Hence has arisen the confusion which prevails in the popular mind as to the nature of this duty. The so-called rationalist has taken abundant advantage of this, and done his best to represent the principles of the Gospels on the subject of property as approximating to those of modern communism. I need not inform those who are at all acquainted with the literature of this subject, that the Gospel of St. Luke and the Acts of the Apostles are in especial favour with that class of writers as substantiating their views, while at the same time they give their author very little credit as an historical authority. But other portions of Christian teaching are implicated in the charge. Its whole weight consists in the incorrect popular notions, which are widely diffused on this subject, and is dissipated as soon as we make a systematic examination of the principles of Christian morality.

87. Theologians have been far too much inclined to view the precepts of the New Testament as portions of a fully-evolved code of morals, binding in the letter, instead of carefully studying their general bearing and character. Hence it has become a matter of general belief that the principles of Christianity are unfavourable to the accumulation of wealth; and that although indiscriminate almsgiving may not be exactly a Christian duty, yet that almsgiving itself occupies so high a place in Christian ethics that the purely Christian character of the act itself may be pleaded in bar of any censure to which the want of discrimination may be fully

liable. The principle of giving to everybody that asks, if fully carried out in practice, carries with it its own correction; still there is a very general impression that liberality, irrespective of any attention to the results which may flow from it, is a virtue enjoined by the principles of Christian morality.

88. On the other hand, the science of political economy teaches—and I think on evidence which is as trustworthy as a mathematical demonstration—that the progress of society is dependent on the accumulation of capital; that capital consists of accumulated savings; that it is the only source from whence the funds for the payment of labour can be provided; that savings invested in a reproductive form provide the means not only for the employment of labour in a permanent form, but when the investment is a profitable one, of increasing the amount of such employment; that such reproductive investments are highly beneficial to society, and that they are only possible where the expenditure is less than the income, and would become impossible if the entire excess of income were devoted to the purpose of charity; that expenditure which is not reproductive provides employment for labour, and is a means of subsistence for those who are destitute of property; that expenditure in luxuries is attended with a similar result; and that if the whole of the funds which are devoted to the above-mentioned purposes, and those which exceed what is necessary to supply us with a bare subsistence, were given away, the effect would be that we should pauperize the whole community by depriving of their subsistence those who are now earning it by honest labour, and bestowing it on a class of a wholly different description, besides putting an effectual stop to all the material improvements of society.

89. Let us put the case as between political economy and the popular view of the duty of almsgiving. A man gives away every shilling which he possesses beyond what is necessary for his own bare subsistence. He is credited with the virtue of the highest generosity, and is considered as a man pre-eminently good. He would be worthy of that designation if virtue could be considered as consisting in the excellence of one half of our nature without any reference to the other half. The money is spent on the recipients, who create nothing in return for it. It only forms a fund, however, for the payment of labour until it is exhausted. Another man invests the same sum on reproductive works. By doing so, he maintains a certain number of labourers while the works are in the course of construction. After they are finished he can repeat the process. The profit becomes an addition to the labour fund. Our railway system is an illustration of this. Our railways

have been created out of surplus profits which have been invested as savings. Not only have they been the means of the employment of labour in their construction, but are the ever-increasing means of providing the payment for additional labour. It is evident, that if the whole of this money had been expended in almsgiving, instead of having been invested as savings, every person whom our railway system, either directly or indirectly, partially or wholly, supplies with the means of subsistence, would have been left destitute of it. But this would not have been the only evil consequence attending it. Honest industry would have been discouraged, and idleness promoted. As at least one half of mankind would gladly desert labour if they could be supported by the other half, if all our superfluous means were expended in almsgiving, the virtue which is popularly designated that of generosity would result in the demoralization of society.

90. While such is the teaching of political economy, and while its general principles are unquestionably laid on a firm basis of scientific truth, it must not be forgotten that both human nature and human society are many-sided, and that we can never arrive at ultimate truth unless we take into consideration the manifold aspects which man presents, and qualify our general conclusions by their results. To this kind of correction all moral and political reasonings are necessarily subject; and unless this be carefully attended to, a partial truth will, in the moral world, certainly become a great falsehood. A large portion of the nature of man would be left a blank if the whole of the superfluous expenditure of society were limited to that particular form which is called remunerative. Man has not only to live, but to live well; and if the supposition in question were to become a reality, many of his highest and noblest aspirations would possess no corresponding object. Admitting also the fact, that a very large portion of human misery is occasioned by human folly, yet it is undeniable that society, as at present constituted, is liable to evils which lie beyond the control of the individual, and which the principles of political economy are incapable of effectually meeting. Our world is full of sorrows, misfortunes, accidents, diseases, death, and innumerable other ills for which this science can provide no sufficient remedy. The most industrious and the most virtuous man may become engulfed in sudden ruin, and his family left in utter destitution, without any deficiency of foresight on his part. Hence the principles of a sound philosophy are compelled to recognize the fact that society presents a twofold aspect, and that there is a wide and legitimate sphere for the exercise of the kindlier feelings; and that the principles

of this science, although they give a true account of the great facts of life, yet, owing to the many-sided aspects presented by the condition of man, are incapable of regulating the entirety of human action. In the infinite complications of society there must not unfrequently arise a conflict of obligations, when the higher ones of mercy ought to outweigh those of an inferior character.

91. Within these limits the science of political economy must admit that a wide sphere exists for the exercise of the virtue of charity, and that the demands made on us by the miseries of mankind may be so powerful that they ought to overweigh all considerations derived from the duty of promoting the employment of labour. It follows, therefore, that no question can arise between the teaching of Christianity and science, unless it can be shown that the teaching of Christianity counteracts and condemns the principle of accumulation on which the fabric of society rests, or that it enjoins indiscriminate almsgiving as a duty.

92. For the solution of these questions we must revert to first principles. The principle of accumulation is one which is so deeply impressed on man's constitution that it requires little external aid to stimulate it. If it were not that man has many passions which urge him in a contrary direction, it would act with a universal potency. On the other hand, the kindlier feelings are the weaker portion of our moral constitution, and are especially liable to be overborne by the violence of selfishness and of passion. As I have often observed, Christianity does not enunciate a moral code. Her business is to proclaim great principles, and to bring powerful moral forces to bear on those parts of our nature which are comparatively weak. Now, although I maintain that it is not true that the duty of accumulation is not recognized by her, I allow that it occupies a place far from prominent in her teaching. But as this was not designed to elaborate a complete system of morals, and as the principle in question had been firmly planted in man's moral constitution as the foundation on which society rests, it might well be left to take care of itself. Firmly imbedded as it is in the principles of our nature, Christianity has taken ample care for its well-being, when it applied the powerful forces at its command to the uprooting of those passions by which it is overborne. On the other hand, the kindlier feelings are not only weak in themselves, but are in constant danger of being overpowered by the selfish ones, and also by the violence of the passions. Christianity, therefore, has pursued a perfectly reasonable

course in strengthening with all her power the compassionate and kindlier feelings in man.

93. If the authors of Christianity had intended to embody in it a complete system of ethical doctrine, I readily admit that many of those duties which political economy teaches, ought to have been more completely worked out, and to have been assigned a distinctive place and value in its teaching. But if we consider what this would have involved, the scientific aspect it must have assumed, and that it would have compelled Christianity to enter into the arena of discussions involving a political character, it will be at once apparent that it must have altered its entire form and character. It cannot be too carefully observed that Christianity, though highly philosophical, is not a philosophic system, and that her purpose is to create moral forces, not ethical systems.

94. It seems to me that many of the remarks which may be found in the writings of Mr. Mill, which imply that there is a deficiency in the moral teaching of Christianity to meet the requirements of the present condition of society, are founded on a supposed opposition which exists between them and the principles of social science. If the previous reasoning is sound, Mr. Mill's views are founded on the misconception that the design of Christianity is to elaborate a carefully adjusted system of ethical doctrine, instead of a body of moral principles and moral forces, nicely adapted to meet the actual wants of human nature. To effect the former is the proper function of philosophy. Another cause of the position taken by this class of thinkers in relation to the moral teaching of Christianity is, that they are of opinion that outward forces and circumstances act more powerfully on the improvement or deterioration of mankind than inward principles. The discussion of this would open on us a very wide subject, which it is impossible to enter on in the present paper. It is an unquestionable fact that in principle Christianity and this class of thinkers stand opposed as to the correct modes of operating on human nature. Christianity commences with that which is within, and operates from another externally; not that she scorns the aid of the other method of procedure. The others would take the reverse course. Which of the two is the more philosophical, I think that past history determines with no very dubious voice. The truth is, the moral principles of Christian teaching render him who receives them ready for every good work.

95. It would swell this paper into an undue length if I were to attempt to determine what is the precise teaching of

Christianity with respect to the virtue of almsgiving ; or to answer the objection that it favours indiscriminate charity. Even if space were not a difficulty, the determination of the question would involve me in discussions of a theological character, which I wish carefully to avoid in the present paper. I shall only observe that in my opinion the teaching of Christianity fairly interpreted on principles of a sound exegesis, are not liable to the objection ; and that the principle which I have already laid down as to the character of moral teaching generally, and that of Christianity in particular, are quite adequate for the solution of any other difficulty with which the subject may be attended. Want of space also utterly precludes the attempt to deal with any other difficulty which has been alleged to exist in special details of its moral teaching. I would only emphatically draw attention to one fact which I have already noticed, that the moral precepts which we find in the New Testament are always given without qualification, and that this alone furnishes a distinct proof that they were never intended to occupy the position of separate precepts of a moral code, applicable to all times and circumstances.

96. In conclusion, therefore, I would very briefly review results. As far as the philosophers by their utmost efforts succeeded in exploring the depths of the moral and spiritual being of man, the authors of Christianity, by the use of methods wholly different, and without coming into contact with them or their discussions, arrived at the same conclusions. Where the one saw a half-truth, the other discovered a complete one. While the moral principles of the one are obviously incomplete, those evolved by the other recognize everything which was really true in the speculations of the former, and give them a completeness which they evidently wanted. The philosopher saw the need of additional moral forces to act on man's inmost being, but could not find them ; the authors of Christianity recognized and created them. The convictions which philosophy could create were weak and vague ; those generated by Christianity were powerful and definite. Philosophy destroyed religious belief ; Christianity created a new one, founded on the most powerful convictions. Philosophy destroyed the connection between religion and morality ; Christianity imparted to religion a moral force, which penetrated to the depths of man as a spiritual being. The philosophers contemplated the improvement of the masses of mankind with despair ; the authors of Christianity brought to bear on them a mighty power exactly suited to their needs. Philosophy saw in dimmest outline and the faintest shadow

the truth that the great instrument of man's improvement was the introduction of ideas and convictions into his reason, and the steady contemplation of them; Christianity at once produced the perfect antitype of philosophic speculation, the embodiment of all that is holy in human form, and exhibited it with power, not only to the contemplation of the elect, but to the masses of mankind. The philosophers speculated; the authors of Christianity acted. What the one sighed after the other realized. The one evolved perfect constitutions for states in his study; the other created a church, which has left its impress everywhere on the pages of human history, and will do the same in ages yet to come. Philosophy recognizes that Christianity has embodied in her teaching all the truths which she had succeeded in discovering, and penetrated beyond her into her innermost temple. To that which ancient philosophy could not attain, but which Christianity has since discovered, the whole current of modern thought has affixed the seal of its approbation. I ask to what does this testimony point? We have but two alternatives before us. Christianity has either been evolved by forces purely human, or it has come down from Heaven. Modern unbelief is outwardly respectful. It has long ceased to assign conscious deception as its origin. Modern unbelievers only invoke the aid of a few acts of untruthfulness when they are positively compelled to do so by the necessities of the position which they have assumed. The authors of Christianity, as they tell us, were good and holy men, who only occasionally invoked the aid of conscious falsehood. While they are compelled to pronounce large portions of Christianity fabulous, those who created the mythic stories of which it is composed were deceived and not deceivers. While its authors possessed the loftiest of moral ideals, and have displayed genius of the highest order, they were yet unable to decide between the creations of their own minds and the realities without. Notwithstanding the high ideal of their moral character, and the profundity of that genius which has invented Christianity, there is no conceivable amount of credulity or superstition with which they are not chargeable. How, then, did they work? Like as in this physical universe, if we can believe the dogmas of certain men who claim to themselves the monopoly of the name of philosophers, the forces of nature acting through infinite time have produced the divine Kosmos of the universe, so the forces of the moral world, acting in entire unconsciousness during a brief period of time, the limits of which can be clearly defined, have elaborated not only the entire moral teaching of Christianity,

but its embodiment of the ideal of perfection in Jesus the Christ. The philosophers were men of great intellectual powers; the whole mass of previously acquired knowledge was open before them; hard did they labour, deeply did they speculate, and we have before us the result of their labours. If Christianity has an origin purely human, its authors were Jewish fishermen and peasants, to whose minds ancient culture had never penetrated, and philosophy was unknown. If not impostors, as our adversaries concede that they were not, except on occasions too tempting to be resisted, their credulity must have exceeded that which is common to man. Whatever other influences aided the movement, credulity, occasional falsehood, high morality, genius, a power of spiritual intuition never before attained, and profound ignorance constituted the foundation. Yet the philosophers evolved their philosophy after painful efforts; and the early Christians spontaneously generated not only the moral and spiritual aspects of Christianity, but a Christ. Surely, if this be the case, one's strength is to sit still. It is the only alternative before us to believe this, or to believe that Christianity, testified to as it is by the highest philosophy, has in it something more than human.

The CHAIRMAN.—I am sure you will all feel that we ought to return our best thanks to Mr. Row for this very important paper, which I am sure will be a most valuable addition to our Transactions. (Hear, hear.) It is a paper which I am certain none of us could master from simply hearing it read. Its real importance will only be fully felt when we have studied it in our *Journal of Transactions*. Still, perhaps, some gentleman present may be somewhat prepared upon the subject; and I therefore call upon any who may have any observations to make, and I hope we may have an interesting discussion.

Rev. Mr. TITCOMB.—It appears to me that this long and complex, but let me add, very valuable paper, may be said to turn upon two propositions, as upon two pivots. The first is, that true philosophy, apart from revelation, only has power to know the good, but has no power to influence it or to produce any of those moral forces by which the good can be advanced and carried out into practice. Of the truth of that we shall none of us doubt. Any one familiar with the writings of Socrates, Seneca, or Epictetus will be quite satisfied of the immense perception of moral and spiritual truth which they possessed. Indeed, those writings are so allied to the statements of revelation, that it is no wonder that many of the rationalistic and infidel teachers set the one by the side of the other, and declared each equally good. At the same time, while these philosophers advocated all that was noble and generous, and great and good in human nature, they added little

or nothing to those moral forces which call into practical action the higher qualities of mankind. It reminds me of the celebrated and oft-quoted remark of the Latin poet :—

——“Videor meliora proboque,
Deteriora sequor.”——

Mr. Row has properly drawn attention to this in his paper. What does Christianity do in contrast with old heathen philosophy? It not only restates all that is good, morally and spiritually, with even more perfectness than the heathen philosophers stated it, but it supplies mankind with moral forces by which all the good can be made to operate so as to perfect mankind. (Hear, hear.) And it has this great advantage, that whereas the heathen philosophy only operated upon a select circle of minds, the pure cream of the intellectual life of the period, and could do nothing amongst the poor ignorant and degraded, but rather looked upon them with contempt; Christianity reverses the process, and, beginning with the lower stratum of mankind—with the poorest, the humblest, and most ignorant—achieves a grander triumph, passes by philosophy, and supplies, by faith in the living Christ, the moral power to do the good which philosophy could only point out, but could not do. This paper is very valuable in dealing with this point, which is, as I have already said, its first pivot, and the conclusion of the writer is one with which we shall all agree, that philosophy must bow her head to Christianity, and say “You have really beaten us in the controversy.” Christianity has done that which philosophy was confessedly unable to do. It might say, with Julian the Emperor, “O Nazarene, thou hast conquered!” for philosophy *is* conquered by Christianity in that respect. (Hear, hear.) The other pivot of the paper (contained in the latter part of it) is, that as philosophy was not intended to provide a complete code of human duties, but simply to deal with the moral forces which govern them, so Christianity must not be expected to produce any practical, and pre-arranged and scientifically formed code of moral duties, but simply to supply the principles on which they rest, and by which they shall be governed and directed; and there I think we have what I may call a strict analogy with nature; and in that respect nature and revelation go together. You do not see botany arranged scientifically in any of the fields or woods of any part of the world. You do not see any arrangement of flowers and trees according to botanical plans, in classes and subdivisions. All that is left to man to do. So with Christianity; the grand principles of action are provided or set forth, and it is left to man to subdivide, to arrange, and to evolve for himself out of the principles laid down in the revelation of the gospel, all that code of human action which our various wants, weaknesses, temptations, and duties may require. If it had been evolved and arranged scientifically in revelation, that would have gone far to prove it of human and not of divine construction; for we may expect the law of revelation to be in harmony with the law of nature. This has reference to that part of the paper which Mr. Row did not read, having reference to the objections made

as to the absence of certain details belonging to the moral code in Scripture such as patriotism and the political virtues. The author of the paper, in his valuable remarks on patriotism and his defence of Christianity in connection with it, might, however, have given greater credit to Christianity as even propounding the political virtues ; but I quite understand his motive. The limits of the paper forbade it, and it might have been too purely theological. I think, for example, that when St. Paul claimed his right as a Roman citizen, he did really appeal in the most practical manner to the political rights and virtues of the community ; and that in his doing so we may conceive Scripture as setting forth his adherence to those virtues and principles. When we are exhorted that prayers shall be offered up for kings and those in authority, and again, when it is said " Fear God, honour the king," we have another appeal to political principles which should not be overlooked ; and to patriotism also. It is part of our Christian requirements to have this principle ; and Christianity lays down the basis on which it rests. So with regard to the heroic virtues. You will remember that St. Paul says, with commendation : " Yet peradventure for a good man some would even dare to die ;" and it strikes me that that is in strict keeping with what we speak of as moral heroism. The heroism which would have a man to die for his faith, is like the heroism of Marcus Curtius, who leaped into the gulf out of devotion to his country. All this would make a framework of Christian patriotism, even from the Scriptures themselves. The same may be said with regard to political economy, which was dealt with in a part of the paper which Mr. Row omitted in reading. Here I should like to make a few remarks of a supplementary character to the paper. It is sometimes charged against Christianity that the laws of political economy are not laid down in the Scriptures, and that as almsgiving is stated in the Scriptures to be a duty, there are wanting those principles of true political economy which are really for the happiness of mankind. Now, I believe in the true doctrines of political economy and in the importance of the accumulation of property for the general interests of mankind, and in the benefit of investments, and so on. The question is, whether or not Mr. Row might not have gone further into this matter——

Mr. Row.—The reason that prevented me was, that it would have swelled the paper so much. The paper would have been quite half as long again.

Mr. TITCOMB.—I quite understand that ; but I want to state to our friends a few points which I think might very appropriately have been brought in here. In the parable of the talents, our Lord seems to teach that Christianity really sanctions the accumulation of property and the putting out of money to usury in a proper manner. When St. Paul says that children should not lay up for their parents, but parents for their children, it is the foundation of political economy, for it involves the principle of a man investing money for posterity. Then it is said :—" If any man will not work, neither let him eat ;" and " Owe no man anything ; provide things honest in the sight of all men." You also have the parable of the labourers in the vineyard, and, " Have I not a right to do what I will with mine own ?"

All these points bristle up in the Scriptures ; and there is much to be said on this side ; for although Christianity does not propound any system of patriotism or political economy, it is sufficient for me and for all Christian minds to feel that, taught by the Spirit of God, there are thoughts, truths, and principles there recognized, which, if applied practically, and worked out in life, will do quite as much as any political or moral system of ethics brought out by man. And the two things meet harmoniously ; the one is sent from Heaven as a revelation, the other is the light in man of what was once given in nature, and which is still spared to him mercifully, notwithstanding his sin. They meet on a common platform : they meet in the sight of God. (Cheers.)

MR. REDDIE.—I feel that I am in an unfortunate position compared with Mr. Titcomb, for I cannot altogether profess a general approval of this paper. Certainly I agree with its conclusions and with the main scope of the argument ; but I am bound also to say that I think Mr. Row has rather exaggerated and overpressed almost all his arguments. But I agree generally with the remarks which Mr. Titcomb has made. No doubt, political economy may be said to have its principles acknowledged in some slight degree in the Scriptures. You have, for instance, the passage, “Charge them who are rich in this world ;” which shows that the Apostle recognized that there were rich Christians. But Mr. Titcomb’s remarks, while elucidating the paper, have fallen short somewhat in the same way as the paper itself. Where I think Mr. Row has made his gravest mistake is, in dissociating Christianity too much from the Jewish system and from what may have been true in the “philosophy” which he puts in contradistinction to Christianity. But the truths of Christianity must not be treated as something that came for the first time from God to man, nor must it be considered that man had not in himself the principles which would enable him to judge what is right——

MR. ROW.—I think I have said so.

MR. REDDIE.—There are many things in the paper that are no doubt quite in accordance with this view ; but there are other parts which are quite contrary to it. That there is a sharp contrast drawn between all philosophy and Christianity, can scarcely be questioned ; but there is also a contrast brought out in this paper between Christianity and that which really belongs to it—the old Jewish system. Mr. Row says :—

“It is even questionable whether, in any writing composed independently of all Christian influences, we can discover a full enunciation of the precept, ‘Thou shalt love thy neighbour as thyself,’ although we can unquestionably find approximations to it.”

I suppose the approximations alluded to are those we find in Plato, put into the mouth of Socrates, in Seneca, and probably in Epictetus,——

MR. ROW.—And in the Stoics.

MR. REDDIE.—But Mr. Row has omitted to observe that those very words which he has quoted are themselves a quotation from the Old Testament——

Mr. Row.—Certainly they are.

Mr. REDDIE.—Well, they were “composed” long before Christianity; and I think it a pity to dissociate Christianity so completely as Mr. Row thus appears to do from that first part of divine revelation; for Christianity is only a part of revelation, as we may see on the very face of the Christian writings themselves. Christianity came in continuation of the law and the prophets, and is only the completion of that revealed truth which had gone before. And there is another point: when Mr. Row alludes to the selfishness of the Jews, he forgot that the 19th chapter of Leviticus, where the text just referred to occurs, as to the second of the two great commandments of the law, also actually enunciates a principle the very reverse of that which Mr. Row attributes to the Jews. It not only tells them to love their neighbours as themselves (v. 18), but in another passage (vv. 9, 10) it says: “When ye reap the harvest of your land thou shalt not wholly reap the corners of thy field, neither shalt thou gather the gleanings of thy harvest . . . thou shalt leave them for the poor and *stranger*.” That shows, that however the Jews may have neglected what they were taught, the theory of the Jewish law was not of that rigid and extremely selfish kind which Mr. Row attributed to them, and which would have been the case had they really acted consistently with their Scriptures, in hating all other nations than their own. But St. Paul condemned them for that: and the whole preaching of the prophets really taught the great brotherhood of nations, although, for a special purpose, and for a time, the Jews had had special privileges and favours. I think that when Mr. Lecky and Mr. Mill make these unfortunate antitheses between Christianity and what is true in philosophical systems, the proper thing to do is to tell these modern philosophers that Christianity professedly takes up all that is good and true in those systems:—“Whatsoever things are pure, whatsoever things are lovely, whatsoever things are of good report,” and all that is good in human nature, as parts of Christianity; and that this is really the key to explain what is a kind of difficulty for which Mr. Row has to account,—namely, that Christianity has not set forth a formal code of morals. But Christianity has done better, in this way: it has set forth principles which will generate proper feelings and grounds of moral action, and it recognizes everything that is good in human nature itself. So also with regard to faith. I am inclined to criticise and question very much the accuracy of Mr. Row’s definition on this point. I object to his confounding faith with knowledge, and resolving all conviction into faith; and also to his statement, that all faith must rest on reason. I was gratified, however, to find in one sentence that he did recognize that there is such a thing as credulity in the world! I fear, indeed, that a great majority of faiths in this world are adopted in despite of reason; and yet no one can say that they are not strong convictions on the part of those who hold them. It would require too much time to pick out all the passages where some of these strange expressions occur, but I think I know pretty well the sense in which Mr. Row meant to employ them; and in that sense there is a kind of truth, though I must say that precisely as they are written they are not accurate

and—I must use the word—not true. Mr. Row says, for instance :—“Without conviction all action is impossible ;” but in his account of temptation there was one little word which throws a light on the whole of the maze into which he has brought himself by using too strong terms, and not balancing the *pros* and *cons* of the case. He alluded to the ancient philosophers, and to the declarations of Plato and Aristotle, that it was impossible to do wrong except by acting contrary to the dictates of reason and knowledge. But that is recognized, so far as it is true, in Christianity, and throughout the Scriptures ; for there people are said to speak wrongly and to do evil “because of the ignorance that is in them,” while it is taught that true knowledge would enlighten and guide them. But Mr. Row says, in the case of the drunkard, that he has to get rid of his convictions altogether—he has to extinguish them ! Now the real state of the case is, that the convictions are not destroyed—they only “become latent,” as Mr. Row, in the one passage I have referred to, truly states. And in the case of the drunkard, the man will tell you that while he takes the glass in his hand, he knows and feels that his act is contrary to his own convictions of what he ought to do——

Mr. Row.—I may explain that all that part of my paper is merely an analysis of the seventh book of Aristotle’s *Ethics*.

Mr. REDDIE.—I venture to question Mr. Row’s agreement with Aristotle ; especially as we have a statement in another passage of the paper as to the unpractical character of all ancient philosophy. Now Aristotle begins his *Ethics* by telling us that his treatise is entirely practical ; and I cannot conceive that any one can read it without thinking it entirely practical in its whole aim and object. Epictetus and Seneca are also eminently practical ; and I must say that I join issue with Mr. Row most thoroughly on that point ; and I wish to have this placed on record, because neither Mill nor Lecky, nor any of our opponents with whom Mr. Row joins issue—and, as a rule, so manfully and ably—will agree with him here. I do not wish to depreciate the consideration due to Mr. Row’s paper ; but it is only right that we should state our opinions openly and fairly ; and that no paper containing erroneous opinions or reasoning should go out from the Institute without some contradiction being also placed on record. There are some other parts in the paper which I think were not necessary for Mr. Row’s working out his main thesis, and which would have been better left out ; and it is on these parts that I feel obliged to speak ; but I think that in some of them Mr. Row is contradictory to himself. I do not think he gives a fair account of the ancient moralists when he says that their only principle of moral improvement was habit. No doubt, the importance of habit is dwelt upon by Aristotle, and, indeed, no moralist could fail to see its great importance. But I cannot understand Mr. Row’s way of putting it. He talks as if the principle of habituation were the only principle of moral *improvement* among the ancients. He says :—

“The only mighty influence with which philosophy was acquainted, which was capable of effecting *improvements* in the moral and spiritual condition of mankind, was, as I have said, that of habituation.”

Now habit is precisely what they were too acute not to know, never could effect "improvements ;" for by habit you can only go on as you are —

Mr. ROW.—Indeed ?

Mr. REDDIE.—Certainly. Of course I know that habits may be broken off, but that must come from a new principle, and is the reverse of habit. If there were nothing but habituation, men could have no improvement. Then Mr. Row, speaking of traditional beliefs, says, people never take up with a new philosophy in which they meet with new beliefs or the reverse of the traditional ones. But look at spirit-rapping : that is a new thing coming in our own time, not inherited, and not from Christianity. Have not some people a conviction of that ? Why, some people actually believe they have seen Mr. Home flying in the air ! I cannot understand why Mr. Row should thus only emphasize traditional beliefs and ignore others, when our every-day experience shows us that people are rather prone to take up with new and false notions. All bubble companies are supported very much through this tendency to ignore experience : people have strong convictions that so and so will be a success, however new-fangled, and often chiefly because quite new ! But Mr. Row seems to think that the only disposition is to believe as our forefathers have believed before us. We know, of course, that there are also such traditional beliefs, but I must deny that they are the only ones, or even that they always have the greatest influence. I think that in some of Mr. Row's elucidations (put forward in the very best spirit and with the best intentions) he has not done justice to Christianity. I am sorry to say that ; and I feel sure he will be glad to correct one passage (which may be merely obscure), so as to leave no doubt upon it. He says :—

"It has been frequently urged against Christianity that it contains no new discovery in morals. If this can be established, I admit that it is fatal to its pretensions as a revelation."

Now I must say that I cannot agree with that, and I am sorry that Mr. Row makes the concession. Probably Christianity does not make any new discovery in morals—certainly the greater part of its morals was not new ; but I do not think that that is fatal to its pretensions at all. Christ did not come to destroy the law, but to fulfil, and to reinstate what were originally the primary moral principles which mankind knew, whether by revelation or by intuition. In correcting a laxity in the Mosaic Law as to divorce, you remember he says : "*From the beginning it was not so.*" And St. Paul says virtually the same thing in arguing that "*nature itself*" teaches us so and so. That is actually stated by St. Paul ; he appeals to what *nature itself* teaches ; and our Lord Himself further says :—"And why *even of yourselves* judge ye not what is right ?" I think, therefore, that it would be fatal to say that there was no moral principle in man apart from Christianity, because——

Mr. ROW.—Do I say so ?

Mr. REDDIE.—Not quite ; but let me finish my sentence. I was going to say—because, if so, I do not see to what principles in man the teaching of

Christianity would have to appeal. But Christianity, without propounding any new discovery in morals, may yet have put forward something new and of the greatest importance ; and it did so in proclaiming the universality of God's mercy through the sacrifice of Christ. Mr. Row's next point will not hold water at all. He says :—

“The idea of a moral and spiritual revelation which contains nothing new is self-contradictory.”

“Nothing new” is indefinite. But supposing that it did not contain anything new in morals, still the great historical facts of Christianity culminating in the sacrifice of Christ—all these are revelations, and, although they are not moral precepts, still, moral precepts of the highest kind may be and are based upon them. Then, in another part of the paper, we are told that “philosophy destroyed religion.” That is in a rather rhetorical part of the paper (more especially considering that it comes from Mr. Row, who is generally hard-headed and very thoughtful in his remarks) ; but there he certainly is anything but accurate in his language. He says :—

“Philosophy destroyed religious belief : Christianity created a new one.”

When St. Paul preached at Mars Hill, did he find that philosophy had destroyed religious belief ? He said, on the contrary, that he found the men of Athens were in all things too superstitious. They believed too much, and they evidently had convictions without reason, which Mr. Row seems to think impossible. But even if the result of philosophical teaching had been the destruction of religious belief, you must not charge philosophy with that, or what would become of Christianity, when in the last days “faith will not be found on earth” ? Truth is truth and right is right, whether people believe it or not. In this paper of Mr. Row's we have a mixture of esoteric and exoteric matters ; and, indeed, the paper is altogether a very unphilosophical one, or, at all events, it is scarcely framed with that philosophical consistency which I should have expected from Mr. Row. I am glad that he has found modern unbelief to be outwardly respectful ; but I am sorry to say that my experience has been different from that (hear, hear) ; and if any one can find anything very respectful in Mr. Francis Newman's books, and especially in his last book in reply to Mr. Rogers's most able work, “The Eclipse of Faith,” all I can say is, that it will very much astonish me ; for a more offensive and unnecessarily disrespectful and blasphemous work I think I never read. Then in another passage Mr. Row tell us that—

“Faith and knowledge have often been contrasted as mental acts.” Adding, “As far as I am aware, such contrast is nowhere made in the New Testament.”

Now, on the contrary, I say that this contrast is made throughout, and especially in what may be called the reasoning parts of the New Testament. What Mr. Row calls “knowledge” is called expressly “sight” in the Scriptures, and they are put in direct antithesis *totidem verbis*. But I do not agree

(apart from the Scriptures altogether) with the definition which Mr. Row gives of faith. We arrive at some conclusion, and Mr. Row says that is necessarily faith ; but I deny it. I have not *faith*, for instance, that Mr. Row is sitting on that chair opposite. I *know* it ; if we are not to make use of words in a sense that destroys all sense. But, on the other hand, I have faith or believe that the gentleman who went out of the room half a minute ago is now going downstairs or is in the street. I do not know that, but I have a conviction or faith that it is probably so. We know what our Lord himself said to St. Thomas after the resurrection, when he said he would not believe till he had seen and felt our Lord's wounds. There we have an express illustration of the difference between actually seeing or knowing a thing and believing. I might have found one or two other passages in the paper to comment upon ; but you will readily believe me when I say, that it is not the most pleasant thing for me to have to make remarks of this kind on a paper which has come from one for whom I entertain such great respect, and who has given us such valuable papers before. And I am most glad to admit that Mr. Row has done something to show that Christianity has taken up all that was good in nature and philosophy, and all that was good and true and intended to be permanent in the older revelation, and that he has put these matters on a fair basis before his opponents. With the exceptions I have pointed out, I agree generally with his conclusions ; and I think, as Mr. Titcomb has very well said, that the paper shows that unquestionably all mere human philosophy must bow its head before Christianity. (Hear, hear.)

The CHAIRMAN.—I am sorry that I cannot altogether agree with Mr. Reddie in his observations on this paper. I have come up from the country to-night, and I have not had time to study the paper carefully ; but I cannot help thinking that when Mr. Row comes to reply he will say he has used the word "Christian" in a general sense for the whole of what we call the Christian revelation, and that where it occurs it occurs as a general term to include the whole of God's revelation to man in the Old Testament, and, therefore, all the law and the prophets——

Mr. Row.—Certainly ; that is so.

The CHAIRMAN.—And that when he speaks of Christianity, it is as a complete development of that revelation which was gradually unfolded to man from the fall until our Lord appeared. If Mr. Row did not include all that, I fully endorse the censures of Mr. Reddie ; but I think Mr. Reddie has been mistaken in his view——

Mr. REDDIE.—I beg to say that I have very carefully read the paper, and I did not mean my remarks as censures ; but I could not help noticing those passages where Mr. Row has distinctly spoken of Christianity as actually opposed to Judaism.

Mr. Row.—I was not running a parallel between Christianity and Judaism in the least degree.

The CHAIRMAN.—I think the main spirit of the paper is exceedingly valuable for the principles which Mr. Row has enunciated, and that we are

very much indebted to him for it. He has shown us most completely that however high philosophical thoughts may have been among the ancient philosophers not under the Jewish dispensation—for the ancient philosophers of Greece were not under the old Jewish dispensation—the ancient philosophy was utterly unpractical, and could be nothing else. It might have influenced the thoughts of a few scholars above the general mass of the people, but was utterly incapable of doing anything for the masses of mankind themselves. Mr. Row, I think, has rather led our thoughts up to a consideration of what was done under the old dispensation. Under the old dispensation the Jew was a man whose morality might compare very favourably with the Christian's, and under the dispensation of those who enjoyed a direct revelation from Heaven we find that morality had the practical effect with religion of raising man to the highest pitch of excellence that his fallen nature was capable of attaining. This is important when men construct philosophical systems not from the power of philosophical thought simply, but with the advantage of the light of revelation, and then refuse to allow the influence of that light to have its due weight in their minds, saying: "We have something far better than Christianity to show." What has been the practical effect of Christianity? Why its practical effect has been to do for all the great mass of mankind what philosophy could only do for a few select students; and not only that, but, as Mr. Row has pointed out, Christianity does its work for the most degraded and lost among the masses of mankind. (Hear, hear.) But I will not take up your time at this hour by any further observations of my own, but will simply call upon Mr. Row to reply to the observations which have been made.

Mr. Row.—I must own that I heard Mr. Reddie's remarks upon my paper with uncommon amazement, because I thought he would argue better and not indulge in such a mass of sophistries. I read to-day an article in the *Edinburgh Review* on Calvin, in which it says that he was so fond of finding fault with everything at school that he got the name of "the accusative case." At Oxford I knew another man of a similar tone of mind, and he obtained the name of "the walking *ἐνστάσις*," which means "objection:"—in other words, he was "the walking objection." I think Mr. Reddie would have thoroughly deserved that name. For example, he proceeded to deal with my observations on Judaism. Now it is really incredible to me that any one should have thought I was running a parallel between Christianity and Judaism. I would recommend Mr. Reddie to read the paper carefully again, and, if he does, he will find that it is not open to any of his remarks on that point. I have spoken of the narrow morality of the Jew, and is not that a plain fact in history? I do not speak of the Old Testament teaching, but of what the Jew was practically. The very precept I myself quote is taken out of the Old Testament Scriptures. Then we come to another point where Mr. Reddie puts in an objection to my remark that, "if it can be established that Christianity contains no new discovery in morals, I admit that it is fatal to its pretensions as a revelation." Surely if there is no new discovery in morals in the New Testament it is worth-

less ; and you know I have used morals in a very large sense, as including the motive as well as the mere moral rule. That is a very important point, because that assertion forms the foundation of the 5th chapter of my work, *The Jesus of the Evangelists* ; and that is a work which has been referred to by Dr. Payne Smith at page 18 of his "Bampton Lectures," and I think his remarks contain much more weight than Mr. Reddie's, and my views have never yet been found fault with at all except by Mr. Reddie himself. I must therefore beg Mr. Reddie to reconsider such an assertion as the one he has made respecting my observation that if Christianity does not contain anything new in morals it is worthless. I am sure that every one will agree with me that if it does not contain any new discovery in morals, it might as well have been spared, if it was intended to make us wiser and better. Then Mr. Reddie says there are various portions of heathen philosophy which assert Christian truth. But that is the very thing I have said over and over again. He seems to imply that I thought there was a radical opposition between the morals of reason and of revelation, but it is the very foundation of the paper that no such thing exists, and I am quite astonished to find any man making such an observation. Then I join issue with him again when he criticises my assertion that ancient philosophy had destroyed all sense of religion. Philosophy thoroughly upset the whole of the ancient religions, and Juvenal says : "No person believes in a God nowadays except a child in swaddling-clothes." Does Mr. Reddie say that that is not so ? If so, he must be most ignorant of the history of the time, for it is so patent and so well known that I heard him make his assertion with astonishment. Let any one read Gibbon: he says the very same thing. Every one else admits that the effect of the investigations of philosophy was to destroy utterly all belief in the current religions of the day. Let any one read the dialogues of Plato, and say whether the argumentative dialogues do not go to the upsetting of all then-existing beliefs. I was surprised to hear Mr. Reddie, with regard to new discoveries and beliefs, refer to spirit-rapping. I certainly thought that that was nothing new. I do not deny that in form it is new ; but it has an old body ; indeed it is not 200 years ago since we burnt witches in this country——

MR. REDDIE.—You have misunderstood me. It might be as old as time itself, and yet what I said was correct, that it came as a new thing to those who now believe it. They did not inherit their faith in it.

MR. ROW.—But the same identical spirit was involved in the belief in witchcraft in the middle ages——

MR. REDDIE.—That does not subvert what I advanced.

MR. ROW.—Yes it does——

MR. REDDIE.—Oh ! not at all.

MR. ROW.—We may vary in our outward dress, but we are the same persons notwithstanding. It is not a variation in the coat which makes a variation in us, and so with respect to many more objections which Mr. Reddie has raised. I was astonished to hear Mr. Reddie speak of the con-

trast between faith and sight in reference to the resurrection of our Lord : it seemed to me to be *non ad rem*. What I say is that faith is a conviction, and that a conviction is the result of all our reasoning processes ; and I guarded the paper by saying, “those processes of the mind involved in the search for truth.” Mr. Reddie has spoken of ancient philosophy with regard to habit. Will it be believed that Aristotle’s definition of virtue is :—
 “ἔξις προφρετικὴ ἐν μεσοτήτι οὕσω τῇ πρὸς ἑκάς ὀρισμένῳ λόγῳ, καὶ ὡς ἀνὸ φρόνημος ὀφίσσεται.”

MR. REDDIE.—I do not dispute that virtue is a habit.

MR. ROW.—What I have distinctly laid down in the paper is this, that the only principle with which the ancient philosophers were acquainted which was capable of powerfully acting on the human mind was that of habit ; but Mr. Reddie says “You can do nothing whatever new by habit.” Mr. Reddie has a great deal of new in him that has grown out of his habits since he was a boy, both mentally and morally ; and for any one to say, therefore, that nothing new can originate out of the power of habit, is to me incomprehensible. The power of habit is the only one I know of which the ancient philosophers recognized as having any real power for working upon society at large, or upon the individual, and it is the very essence of ancient ethics from one end to the other. Mr. Reddie has also criticised the passage in which I simply analyzed the 7th book of the Ethics,—where I spoke of knowledge, and said that it is not possible for a man to do wrong while knowledge is existing in his mind except it be in a latent state. I carefully analyzed that book, and it is evident that no man ever does fall into any kind of vice until he has made the knowledge become latent. That is all I meant——

MR. REDDIE.—To that extent I agreed with you.

THE REV. C. A. ROW.—Then so far we are agreed, that against the existence of positive knowledge contemplated by the mind it is impossible for a man to do wrong, and that the first thing he has to do is to suppress that knowledge and make it latent. I assert that the passage is a direct analysis of that in Aristotle. The whole passage is a very remarkable one, considering that it was written by a heathen before Christ. It occurs in the 7th book of Aristotle’s Ethics, and from the time I first read it at Oxford to this day I have looked at it with wonder as the work of a heathen. I have only now to say that I cannot see one point of conclusiveness which Mr. Reddie has established against the reasonings I have adopted. He has taken a most limited view of my observations in some points, for no man can believe, for instance, that I was running a contrast between Judaism and Christianity. It is to me astonishing that any one could read my paper with any care and not see that what I discuss is revelation taken as a whole. The contrast I make is between the spirit of ancient philosophy and Christianity, and instead of having denied that man has intuitive moral perceptions, I have repeatedly reiterated that he has. There are passages over and over again in the paper to that effect, and I hold those views most strongly ; but any one would suppose I was almost a rationalist from what Mr. Reddie has

said. I have now only to thank you for your attention. The subject is one that requires a very great amount of thought, and I quite agree with Mr. Mitchell that the paper requires to be read more than once before it can be effectively understood. (Hear, hear.)

Mr. REDDIE.—Let me endeavour to mollify somewhat the wrath with which Mr. Row has received my observations. (Laughter.) I qualified what I said very carefully, and quoted what I objected to; and with regard to the contrast between Judaism and Christianity, I said nothing of the kind which Mr. Row attributed to me, as to any general parallel between them being drawn; neither did I question anything in the abstract from the 7th book of Aristotle's *Ethics*; and I also said distinctly that there seemed to me to be certain parts of the paper which were contradictory to others, and, of course, I agreed with the parts that contradict what I opposed. For instance, Mr. Row himself says (in § 29), "Under the influence of habit alone, it was evident that mankind must go on in their old groove." And yet, when I said just the same thing, Mr. Row exclaimed, "Indeed!" and has since declared it incomprehensible! But *littera scripta manet*. When this discussion is printed, it will be seen how far my observations are justifiable or not. However, Mr. Row has very much misunderstood me if he thinks there was any personal feeling in what I said. I spoke, and said that I spoke, with pain in criticising the paper as I felt bound to do; and I think his personal attack about "walking objections" and "accusative cases" scarcely exhibits the spirit in which we should approach the discussion of our papers here, and it will have no effect in preventing me as freely discussing any other paper in future. (Hear, hear.)

The meeting was then adjourned.

ORDINARY MEETING, FEBRUARY 7, 1870.

THE REV. WALTER MITCHELL, M.A., VICE-PRESIDENT, IN THE
CHAIR.

The minutes of the last meeting were read and confirmed.

The election was announced of the following member :—

J. N. Goren, Esq., M.A., 6 Stone Buildings, Lincoln's Inn.

The Rev. Dr. THORNTON then read the following paper :—

ON THE NUMERICAL SYSTEM OF THE OLD TESTAMENT. By the Rev. ROBINSON THORNTON, D.D., *Head Master of Epsom College, VICE-PRES. Vict. Inst.*

IT will appear at first sight a somewhat anomalous proceeding for a member of this Institute deliberately to argue, as I am going to argue, in favour of views held and published by one whom we all look upon as the very embodiment of Scriptural scepticism—I mean Dr. Colenso. In his too well-known Essay on the Pentateuch he devotes page after page to the examination of the numbers recorded in that portion of the Old Testament, and draws from his criticism the conclusion that there has been a systematic falsification of those numbers, and that consequently every one of the Books in which they are found is entirely untrustworthy, and rather to be accounted as a clumsy legend than as the Word of God. I am about to follow him in his criticism, though not in his conclusions. Such a proceeding seems to need some apology; mine will be this, that I am writing in the interests of that Scripture which I criticise. I propose to make my remarks entirely independent of what he has written. To analyse and comment upon his treatise *against* the Pentateuch (I prefer the preposition I have employed to the milder *upon*) would be, in my opinion, not exactly within our province, as being liable to lead us into matters theological.

2. I cannot help remarking here that there must be some ground for his assertions. They are not entirely the creations of his own brain, evolved out of his own individual conscious-

ness. There must be some difficulty, some apparent, if not real, unsuitableness in Old Testament numbers, to form the basis of his sceptical structure; some spark, to account for all the volumes of smoke which he has emitted, to cloud both the sacred page and the mind of the believer. And it is our duty as seekers after, and champions of, truth, to agree with him where he is right, and not to consign his statements as a whole to the region of condemned falsehoods. If he has really found a weak point in our popular belief, it is not our duty only, but our interest, to give up that point, lest we subject ourselves morally and intellectually to the same penalty and the same disgrace as military law assigns to those who obstinately defend a post plainly untenable. Indeed, there is nothing, perhaps, which has more tended to alienate men of science from religion, and to bring about the present attitude of the scientific world towards the Christian Church, than the dogged and inflexible manner in which believers have maintained, as if part of the Christian faith, propositions at variance with philosophy, and either not really deducible at all from the words of revelation, or, if deducible from the letter, not necessarily and unavoidably so resulting. Revelation tells us of sunrise and sunset; and we may deduce from these words that the sun moves, while the earth remains still. But the conclusion is not inevitable, for the words may be used in a popular sense; and thousands of people, who carp at the unscientific phraseology of Scripture, do habitually use these words without thinking what an inference may be drawn from them. To insist upon this one conclusion, and to maintain it as an article of the faith, was the error of Galileo's opponents; and the error has remained even to the present time.

3. As I have thus frankly avowed our own faults, I take the liberty of digressing a little, to add that our opponents are by no means free from it. They insist upon affixing to Scriptural expressions one meaning and one only, and that the most unscientific they can discover, and then discuss leisurely the incorrectness and errors of the Bible, without listening to any declaration of the real signification of the statements they criticise. Thus, the *rakia'*, because, forsooth, the LXX. renders it στερέωμα, "firmament," means "something solid"; and we are not allowed to plead that the word signifies simply *extension*, and has nothing to do (necessarily) with *solidity*. Or, if we read of hares chewing the cud, we are told this means that they are ruminants with four stomachs, and cannot mean anything else; and are silenced or disregarded if we argue that there is nothing about stomachs in the word *garar*; that

it simply signifies to saw, and thence to chew, and that hares do constantly regurgitate (*he'elah*, cause to ascend) food and masticate it over again.

4. To return to my subject. We have no right, I say, to maintain an untenable point, any more than we or our opponents are at liberty to select one out of several possible meanings of a word or passage in Scripture, and insist upon it, in the teeth of all arguments to the contrary, as the only correct one. Such a point, I confess, I consider the numbers of the Old Testament to be. I cannot look upon them as trustworthy; in fact, I believe many of them to be incorrect: and I hold that believers will be doing a service to the truth by surrendering them, and acknowledging that they are probably inaccurate. Such an avowal will render nine-tenths of Colenso's essays powerless, and will cut the ground from beneath a number of sceptical arguments. I assert it to be a duty of our Institute to look into this matter, and,—while we mercilessly examine the hasty conclusions and unsupported dicta of our scientific opponents, and show their want of true philosophy and rigid inductive logic,—to prevent the faithful from forcing upon the belief of doubters and waverers, as revelation, what was really not revealed at all.

5. The numerical difficulty which first struck me, now some years ago, and before Colenso's books were published, was not suggested by an intellectual Zulu, but presented itself to my mind when I read in the books of the Kings and Chronicles that Ahaz began to reign at 20 and reigned sixteen years, and that Hezekiah succeeded him at the age of 25. Could Ahaz be a father at 11 years old? for there is no hint or appearance of an interregnum. The LXX., it is true, probably has twenty-five years instead of twenty in the passage in Chronicles; but even this reading is not certain; and the Greek in Kings, and the Hebrew (as we have it) in both passages, have simply 20. The Vulgate follows the Hebrew. Here was a plain case of incorrectness in numbers, or rather in notation. Was it not possible that other instances of inaccuracy in numbers might occur?

6. Of King Josiah we read that he began to reign at the age of 8, and reigned thirty-one years. He was succeeded, not immediately, but within the year, by his son Eliakim, or Jehoiakim, aged 25. He must have been born when Josiah was only 14: a state of things which I believe I am right in terming scarcely possible.

7. Then I came to that remarkable, and to me convincing, passage in 1 Samuel vi. 19: "He smote the men of Beth-she-mesh, because they had looked into the Ark of the Lord, even

he smote of the people fifty thousand and threescore and ten men." This extraordinary statement is distinctly made in the Hebrew text, as we have it, in the LXX., and in the Vulgate. Fifty thousand, however, can hardly be accepted as a correct number. It is nearly one-tenth of the whole number given as the fighting force of the Israelites at the Exodus, and two-thirds of that given as the force of Judah. It is just one-tenth of that given as the male population of Judah in the time of David. It is seven times the male population of Gibeah, an important town, in the time of the Judges. It is more than the whole population of many a considerable town in our own country. Fifty thousand grown men imply a population of 175,000 in all. Fifty thousand corpses would make a heap of very nearly twenty yards in length, breadth, and height. But it is a number which long ago attracted notice. Dr. Kennicott thought the reading incorrect. Tindal, in his *Christianity as Old as the Creation*, sneers at the whole transaction, without, however, insisting so strongly as one would expect on the enormous number of 50,000. Waterland answers him by giving another rendering of the passage, "seventy out of fifty thousand." This involves the insertion of the preposition "out of," and the improbable number of 50,000 for the male population of the inconsiderable town of Beth-shemesh. Bochart, in his *Hierozyicon*, observes that (as the Hebrew runs, literally translated, "seventy men fifty thousand men") the meaning probably is "seventy men, viz., fifty out of a thousand," as if the seventy smitten were one-twentieth of the whole population of the town. In short, it is clear that there is an error as regards number in the statement, whatever mode may be adopted of rectifying that error.

8. It is not the primary object of my paper to suggest probable emendations. What I wish to prove and to impress upon others is, that there is reason for thinking the numbers, as read in our text of the Old Testament, to be corrupt; and if so, that we shall, by acknowledging it, remove a great stumbling-block from the way of those who are tempted to doubt. It is not my intention, nor is it the object of this Institute, to enter upon textual criticism or hypothetical emendations. Still I think I shall be pardoned if I suggest that in the *old* Hebrew character, the symbols of "out of a thousand" and "fifty thousand" might be most easily mistaken for one another, and that the seventy itself is but a mistake for the indefinite number seven. Those who understand Hebrew are aware that the tens are expressed by the plurals of the units: "seventy" is in Hebrew expressed by "sevens." Here is an easy opportunity for error; to which we may add

that, though the character expressing seventy is not particularly like that denoting seven, the names of the letters, 'Ain and Zain, are not unlike one another. In short, I understand the passage to mean that as many as a thousand *people* gathered about the Ark (the Vulgate makes a difference which is not in the Hebrew, between septuaginta *viros* and quinquaginta millia *plebis*), and that out of them several presumptuous men were struck dead whose sacrilegious curiosity had led them to profane the hallowed shrine of God.

9. These two, or perhaps three, instances of plain incorrectness in numerals led me to the conclusion which I have now ventured to put before you. I shall proceed to examine a few more details.

10. The earliest numbers, or sets of numbers, which we meet with in the Old Testament are, I need hardly say, those representing the ages of the antediluvians and of the early postdiluvians. An investigation of these belongs to a subject on which I do not propose to touch, Bible chronology. Let me only take this occasion of protesting against the elevation of Archbishop Ussher's chronology into an article of faith. With the highest respect for Ussher's learning, ingenuity, industry, and accuracy, I must decline to hold him infallible. Yet there are those who consider it scepticism and irreligion to doubt whether the Tower of Babel were built exactly 2,233 years before the Christian era, or to suggest that 1,491 does not necessarily show the exact number of years that passed between the Exodus and the theoretical date of the Nativity. With regard to the numbers themselves, I would suggest that, as our Hebrew text reads them one way, the Samaritan Pentateuch another, and the LXX. another, we may be excused for doubting whether we have the right numerals at all, and are by no means justified in insisting upon them in the teeth of scientific calculations.

11. The size of the Ark, or giant vessel constructed by Noah, has appeared to some unwieldy. But it is not monstrous. Reckoning the cubit at 1 ft. 6 in., we have the dimensions 450 feet length, 75 feet breadth, 45 feet height. We have no ancient vessel whose magnitude has been recorded approaching this in size, with a few exceptions: the vast galley said to have been constructed by Archimedes for Hiero, a naval edifice which we may banish to the region of the mermaid and the kraken; the cedar ship of Sesostris mentioned by Diodorus, and the Isis of Ptolemy Philopator, by Athenæus, to each of which is assigned a length of 280 cubits, or 420 feet. The vessel of Noah, however, was not intended for navigation, but for safety; and though we may reasonably doubt whether

Sesostris or Ptolemy or Hiero really had, as a matter of fact, such enormous ships constructed, there is no reason why Noah's vessel should not have reached the recorded size. One of the largest vessels in the English navy (the *Aboukir*) is, I believe, 241 feet in length by 60 in breadth; the *Great Eastern*, 324 by 51. In the size of the Ark there is, therefore, no antecedent improbability.* The next number that we meet with, the 318 trained servants of Abraham, is probably correct: it is just about the number of armed retainers we could expect a powerful sheikh of those days to be able to bring into the field.

12. But we now arrive at a number which has been a difficulty and an offence to many, and is, so to speak, the very basis of the operations of Dr. Colenso and his followers against the authenticity of the Old Testament,—I mean the number of the Israelites who passed the Red Sea into the Desert of Sinai. They are said to have been 600,000 men, besides children. A year and a month afterwards they amount to 603,550, besides the Levites, some 20,000 in number. And these having all died, their representative progeny, forty years after, amount to 601,730. I do not hesitate to say that I consider these numbers to be very different from those originally written by Moses. It is usually argued that such a multiplication was impossible without an absolute miracle. This argument, it appears to me, will not hold water. We are given to understand that the Israelites in Egypt were exceptionally blessed with issue. Now, if we suppose 70 men to have come down into Egypt, and each man in 35 years to have reared, on an average, 10 children, five of them boys, we should have, at the end of 35 years, 350 males; at the end of 70, 1,750; at the end of 175 years, 218,750; and at the close of the 210 years of sojourn, 1,093,750. I say 210 years, because (as the Palestine Targum explains) the 430 years mentioned in connection with the sojourn in Egypt are counted from Abraham's going down into that country. Now, adding half of each of these last two generations together, to represent those within the military age, we have 656,250. It is possible,

* I took these dimensions from a treatise on "The Ship," by F. Steinitz. Admiral Fishbourne very kindly writes to me as follows:—"You have been misinformed as to the dimensions of the *Great Eastern*, and have given those of the *Great Britain*. There are very many ships over 400 feet long now. The length of the *Great Eastern* is over 600 feet, and her breadth 82: My belief is that the ark was 300 royal cubits of 24 inches; and many have been built somewhat like the *Baron Renfrew*, of whole logs of timber." Its size was, therefore, as I have stated, by no means incredibly great. There is no reason to imagine that we have not the original number as given by Moses.—R. T.

therefore, that there may have been about 600,000 men of war, all descendants of the 70 who came down into Egypt 210 years before. It is possible, I say; but is it probable?

13. (1.) Could so large a number have dwelt in all Lower Egypt, not to mention the land of Goshen, to which they appear to have been restricted? The number of 600,000 men implies a population of 2,000,000 at least; the Targum of Palestine says that each man had five children with him, which, allowing each man one wife only, makes a total of 4,200,000. It adds that the "mixed multitude" amounted to 240 myriads; so that the total number of fugitives reached 6,600,000. Evidently Rabbi Jonathan ben Uzziel did not want to help us out of a difficulty, as he added this trifle of 6,000,000 to the already large number of 600,000. But adhering to the lower figure, 2,000,000, can we suppose so many to have been able to find habitations? The present population of Lower Egypt is about 2,000,000. But at the time of the Exodus there must have been Egyptians as well as Hebrews living in the country. We cannot put them at less than 1,000,000. Now, as the present population of Lower Egypt gives 340 to a square mile, a population half as large again would give 510 to a square mile, which is considerably in excess of 438, the number per square mile inhabiting Belgium, the most thickly-populated country known in the world. I say known, because it is likely that some parts of China, as yet unvisited, are more densely peopled.

14. (2.) These 600,000 men, or rather more, nearly 620,000, as numbered in the wilderness, all died in the course of their forty years' wandering. Of these we are told 14,700 died in one fearful visitation, 24,000 in another, and some smaller number on two other occasions. But allowing 50,000 for those who died on these occasions, and supposing them all to be men, we still have 570,000 men dying in forty years, or very nearly forty per day. And as the women were not exempt from the common lot of humanity, the daily death-rate, excluding those who perished by pestilence, must have been at least fifty. Is this probable? I am not objecting to the number of deaths per thousand per annum; a death-rate of one-fortieth, or twenty-five in a thousand, is not a high one. The present rate in London and Paris is about twenty-seven, and in some of our unhealthier towns far higher. What appears to me enormous is not the proportion, but the actual number of dead bodies collected within a limited space.

15. (3.) These 620,000, strangely enough, leave behind them a progeny somewhat less numerous than themselves. Instead of 603,550, we have at the numbering in the plain of

Jordan only 601,730. Instead of five sons, each man would seem to have had, on an average, a fraction less than one.

16. The words translated six hundred thousand might, by a little straining, be rendered one thousand six hundred. This number of adult males would imply a total population of about 6,000, a manageable number. But I must frankly avow my belief that the word thousand, *eleph*, is an insertion; and that the subsequent numbers have been amplified by some similar misunderstanding; that 600 armed warriors, with a retinue of 2,000 or more, escaped from Goshen, crossed the Red Sea, and wandered and died in the Desert. The increase of the seventy original males into a total of 2,500 in 210 years is much above the ordinary rate. Taking $\frac{1}{227}$ th as yearly increase, a fraction which, I believe, represents the ordinary annual rate in France, we shall get about 360 as the progeny of 140 likely to be existing at the end of 210 years, at the average rate of increase in an old country here in the West. But the Hebrews increased exceptionally, and numbered some 2,500 at the end of that time; the progeny, doubtless, of others beside the seventy heads of tribal divisions who came into Egypt. We shall find similar misconceptions of numbers if we examine some subsidiary numbers in the account of the wanderings in the Desert. In the plague which ensued upon the matter of Peor, 24,000 are said to have died. The pestilence seems to have lasted but a few days, so that the daily death-rate must have been enormous; far exceeding that terrible mortality at Paris in the year 1832, when the cholera first appeared, and in six months carried off 18,000 victims out of a population of less than 900,000. What can have been done with the corpses? In cities or extended tracts of country furnished with all appliances for the burial of the dead, we can understand how a large number may be disposed of in a given time; but how could the 24,000, or the 14,700 who died in the matter of Korah, have been prevented from poisoning the whole locality by their decomposition? I shall be told that the dry sands of the Desert, by their desiccative power, destroyed or neutralized all that was pestilential. I must, however, doubt whether 24,000 corpses, interred at once within a limited space, would not severely tax these desiccative powers. It seems as if the whole Desert must have become a very Aceldama.

17. The spoil taken from the Midianites, as recorded in the 31st chapter of Numbers, is expressed in very high figures. I will not say much of the 675,000 sheep, the 72,000 oxen, and the 61,000 asses; those who have travelled with Tartar hordes, or even with wandering Arabs, speak of countless

herds and flocks as forming part of the cavalcade. The weight of the gold offering, too, 316 lb. avoirdupois, is not overwhelming. But 32,000 virgins! Surely there must be some inaccuracy here. These 32,000 virgins had at least 10,000 fathers and 10,000 mothers, and probably 30,000 brothers; and all these 50,000 people were to be put to the sword. Again I ask, what became of the corpses?

18. I shall trouble you with one more set of numbers from the Pentateuch. In the 38th chapter of Exodus, we have given us a sum total of the metal used in the work of the tabernacle, given in talents and shekels. There is some variation in the estimate formed by different writers of the value of the shekel, as represented by our own weights. On the authority of Smith's *Dictionary of the Bible*, I put the talent of gold at 1,320,000 grains, 7,000 of which go to a pound avoirdupois; and the shekel consequently at 132 grains. On the same authority I make the shekel of silver weigh 220 grains, and the talent 660,000; the shekel of copper 264 grains, and the talent 792,000. At this rate the 29 talents 730 shekels of gold weighed 2 tons, 7 cwt., 2 qrs., 19½ lb.; the 100 talents 1,775 shekels of silver 4 tons, 4 cwt., 2 qrs., 20½ lb.; and the brass or copper (70 talents 2,400 shekels, 3 tons, 11 cwt., 2 qrs., 2½ lb.: total, upwards of ten tons. All this had to be transported from place to place, with boards, hangings, and other fittings. Is there not some misapprehension of figures here? The gold by itself, at 3*l.* 5*s.* the ounce troy, would be worth 259,840*l.*; a large sum for the Israelites to have become possessed of by borrowing from the Egyptians.

19. In the 35th chapter of Numbers we have, on the other hand, a figure which, though it contains the fatal word thousand, has every appearance of being handed down to us without exaggeration; although, curiously enough, there seems to be a false reading in our Hebrew text, corrected in the LXX. The *migrash*, or "suburb" of the Levitical city was to extend 2,000 cubits, or a little more than half a mile each way from the city. The Hebrew says first a thousand, and then two thousand; but the latter is given by the LXX. and the Vulgate in both cases; the latter substituting, in the 4th verse, *mille passuum* for *mille cubiti*.

20. The Book of Joshua presents no numerical difficulties to the reader; but in that of Judges we find again the same misapprehension and distortion of numbers as I have pointed out in our text of the Books of Moses. The six hundred men slain by Shamgar, if not supposed to have been all killed on one occasion, may be considered a possible number, and Jabin's 900 chariots of iron a probable one, as probable as the 600

chariots of Pharaoh which pursued the departing Hebrews. But we find in the 8th chapter that the Midianites brought into the field 135,000 men, and that of these 120,000 were slain. Similarly in the 12th chapter we find in the feud between Gilead and Ephraim, 42,000 of the latter—more than the tribe amounted to according to the first numbering under Moses, and far more than given as the result of the second numbering—were massacred. Compare these with historical numbers. At the battle of Waterloo, where the forces of three great nations, with their auxiliaries, met in the field, the whole number engaged was not 175,000, inclusive of the 36,000 under Blucher; and the total loss, killed, wounded, and missing, amounted to about 23,000 on the side of the allies, and 37,000 on that of the French; 60,000 in all. Of these probably not one quarter were actually slain on the spot; but reckoning them all as “smitten,” the total is only half of what the Midianites are said to have lost. In the massacre of the Huguenots, in 1572, the number put to death, in various parts of France, was, according to De Thou, about 30,000; five-sevenths of the number of Ephraimites stated to have been slain at one place and one time. I must add to my list of improbable massacres the thousand men said to have been slain by Samson at one time with the ass’s jawbone. Consider what a number of blows it would require to deprive a thousand men of life. Consider the time which the carnage would employ; for, allowing but half a minute to each, it would take more than eight hours; consider the effects of leaving a pile of 1,000 unburied bodies beneath a Syrian sun! Happily in this passage we have a clue to the origin of the error. The poetical number, “a thousand,” used in Samson’s metrical song of victory, has evidently been permitted to take the place of the authentic number; but it no more means that 1,000 men were actually slain, than the song of the women after the slaughter of Goliath meant that myriads had fallen by the stripling’s hand. On the other hand, the Philistines gathered together to make sport over Samson in his captivity, do not seem exaggerated. The house, it is said, was full of men and women, and upon the roof were about 3,000. A gathering of 5,000 or 6,000 on such an occasion is far from improbable; and the percentage killed by the fall of the edifice, though not so great as that which would express the effect of the fall of one of our cathedrals, would, doubtless, be high enough to justify the statement that Samson slew more in his death than in his life, which would hardly be the case if we are to take into consideration the thousand we have just been discussing, said to have been slain at Lehi.

21. The affair of Gibeah, as recorded in the last three chapters of Judges, introduces us to some more apparently excessive and inconsistent numbers. This affair is generally referred to the earlier period of the Judges; some put it within fifty years from the passage of Jordan. In it we are told that the men of Israel, beside Benjamin, were 400,000 men; and it is particularly stated that all Israel, including Gilead, that is, the trans-Jordanic tribes, were gathered together. Benjamin amounted to 26,700. So Israel had decreased by nearly 200,000, and the tribe of Benjamin by some 9,000, since the Exodus. At the second numbering Benjamin is said to have mustered 45,600 men; so that the tribe must have decreased by nearly 19,000 in no very great space of time. But these 26,700 men, of a rapidly decreasing tribe, were able to kill first 22,000, and then 18,000 of Israel, and that without the loss of more than 1,000 men; for 25,100 Benjamites were slain subsequently at Gibeah, Rimmon, and Gideon, and 600 escaped, and ultimately resuscitated the tribe, to become, though small, a very important one, inasmuch as it produced two Sauls, the King and the Apostle. It could muster 1,000 repentant men to meet David on his return from banishment, in spite of the loss of 360 in Ish-bosheth's rebellion, and furnish 380,000 body-guards in the time of Jehoshaphat.

22. The fifty children of Priam have always been considered as legendary; but they are nearly equalled by the forty sons of Abdon, and the forty-two brethren of Ahaziah, King of Judah, if they were brothers, not relatives only, and surpassed by the thirty sons and thirty daughters of Ibzan, and the seventy sons of Jerubbaal and King Ahab. Polygamy, perhaps, may render these numbers possible; there may be in Utah at the present day families as numerous. Still it is rather remarkable that we hear of but one single child of Solomon's, though his harem is said to have contained the enormous number of 1,000 women.

23. I have already discussed the 50,070 men said to have been smitten in Beth-shemesh. Besides this, the books of Samuel present us with two other apparently inconsistent numbers. The whole force of Israel and Judah mustered by Saul after a solemn summons amounts to 330,000. It is probable, however, that this and the 300,000 gathered in Telaim represents only a fraction of the whole fighting force. If not, it is quite irreconcilable with the census held by David some seventy or eighty years after, when the adult male population of Israel and Judah amounted, according to the Book of Samuel, to 1,300,000; according to that of Chronicles,

1,570,000. The discrepancy between these two is not great; but the fact of there being any difference at all, I think, tends to prove my point. The number, whether we take the higher or the lower, seems to me probably a correct one. It would imply a total population of about 5,000,000 or 6,000,000; half of the number we obtain by calculating the increase on 2,000,000 (the supposed number who came out of Egypt) at the rate of $\frac{1}{227}$ per annum for 475 years. But, though we find Judah numbered in 1 Chronicles at 470,000 only, still 100 years later, in the time of Jehoshaphat, the kingdom of Judah could muster, exclusive of Benjamin, 780,000.

24. But I will refrain from wearying you with tedious details. I will call your attention to a very few points more. The 7,000 who followed Ahab, king of Israel, killed, we are told, 100,000 Syrians in one day: that is, more than fourteen each; and 27,000 were killed by an accident on Aphek; so that the whole Syrian force seems to have been nearly 150,000. Can we consider that we have here the number really intended by the inspired historian? Or again, to turn to a different subject-matter, we read in the 1st Book of Chronicles that David prepared 3,000 talents of gold and 7,000 talents of silver; and his princes offered more than 5,000 talents of gold and 10,000 talents of silver; that is to say, David left to Solomon, in all, more than 673 tons of gold and 715 of silver! And on a certain day, we are told, they offered as burnt-offerings 1,000 bullocks, 1,000 rams, and 1,000 lambs. Can these be correct figures? Again, Solomon is said to have had 153,300 (the 2nd Book of Chronicles says 153,600) hands employed in bearing burdens and quarrying for the Temple, and offered at the dedication 22,000 oxen and 120,000 sheep; and yet this Temple, according to our text, was only 105 feet long, 30 broad, and 45 high, with a porch of 30 feet by 15; and a "house, that is the temple before it," *i.e.*, an outer court, of 60 feet in length, and an oracle, or chancel, as we should term it, of 30 feet long, broad, and high. These dimensions are as much under the mark as the other numbers I have just stated are above it; they are exceeded, I imagine, by every cathedral in England. The total length, court, porch, house, and oracle was but 225 feet, not half the length of St. Paul's (510 feet), not so much as the transeptal breadth from north to south portico (282 feet). Surely the great Temple of Solomon, the centre of worship for 5,000,000 of people, with all its golden, and silver, and brazen furniture, was larger than an ordinary parish church!

25. I will trouble you with only one detail more. When the children at Bethel, the stronghold of Israelite idolatry,

jeered at the prophet Elisha, urged to it no doubt by idol-worshipping parents, the honour of God's minister was vindicated by the punishment of the offenders. Two she-bears (the ferocity of the Syrian bear, especially the female, is well known) tare forty and two children of them. Can we accept this reading? Can we suppose that forty-two children were then and there destroyed by two animals? A very slight modification of the Hebrew would enable us to render "two out of those forty children," a rendering which seems very likely to give us the real number both of offenders and sufferers.

26. This is by no means an exhaustive treatise on the numbers recorded in our present text of the Old Testament; but they are sufficient, I think, to raise a discussion on the whole numerical system, as we at present have it, of the Hebrew Scriptures. I have, as I confessed at the outset, been treading in the steps of Dr. Colenso and his school. I rejoice to find, however, that I am not singular in so doing. Dr. Payne Smith, the Regius Professor of Divinity at Oxford, in his Bampton Lectures, distinctly avows it as his opinion that the Israelites at the Exodus did not exceed 80,000 in number, and that the actual descendants of Jacob were considerably fewer. Less than a hundredth part, I should say, as I have already said.

27. But though I agree with one of Colenso's premises, I do not with his conclusions. He argues, "These numbers are incredible, therefore the whole Scripture is untrustworthy." I argue, "Scripture is true, but these numbers are incredible, therefore they are not part of Scripture." I am not an opponent of the Book, but of a part of the received text. I am on the side of patriarchs, priests, and prophets, but against the upholders of Masoretic tradition. The numbers recorded in our Scriptures stand on a very different footing from the facts; and while I cling most stoutly to the facts as recorded, I give up the numbers. The Red Sea and the Jordan were divinely and miraculously divided, and the Israelites did pass through, led by the pillar of cloud and fire: but there were not two millions of them. The sacrilegious men of Beth-she-mesh were smitten, but there were not 50,070 of them. The Ephraimites were massacred, but not 42,000 of them. Samson did slay a number of his enemies with that rude weapon which Divine might made in his hands as effective as the sharpest and weightiest falchion; but he did not kill a thousand in one day. Solomon was gifted with wisdom and riches by the Most High, and built a sumptuous temple to His honour; but he had not so much as 673 tons of gold, or £71,500,000, and the Temple was more than 200 feet long.

28. As I do not hold that the credibility of Scripture as regards matters of fact is in the least degree impaired by the false readings of numbers which have crept into the text, so neither do I admit the sceptical conclusion that there has been "systematic exaggeration." Anything more unsystematic than their errors it would be very difficult to find; nor are they always exaggerated. Sometimes numbers appear enormously—if I were not speaking of a Sacred Book, I should say ludicrously—in excess; sometimes they come short of what seems most likely to be the truth; sometimes they are palpably correct and authentic. There has been no failure, as the infidel would have us believe, either on the part of the Divine or the human author, nor any villany on the part of the keepers of Holy Writ; only a few trivial mistakes on the part of the scribe, a few slight misapprehensions on the part of the reader.

29. But some one may reply,—“Why decline to accept these numbers as we have them? Were not the Israelites living under a dispensation full of miracles? Could not the Almighty have slain, if He so willed, 50,070 men, and then annihilated their corpses, so as to preserve the vicinity from pestilence? Could He not have enabled Samson to slay his thousand in the twinkling of an eye, and to dispose of their bodies before nightfall?” I answer, that there is no doubt of the infinite power of the Most High: most surely He *could*, but *did* He? It is not said that there were any special miracles beyond the single marvellous fact itself. We are not told of any special exertion of Divine power to enable a million of worshippers to take part in the great Paschal sacrifice within a space so contracted as the Temple, even supposing its outer courts included in the consecrated space. That is to my mind a low view of miracle, which tends to the acknowledging a number of miracles wrought *pro re nata*, or, what I may call a waste of miraculous power. When once I read that the Almighty did a certain thing, it is enough for me; but I decline to accept numerical accompaniments which would render necessary a series of subsidiary miracles.

30. There is little difficulty in assigning reasons for the alteration of numbers, while the history of facts remains incorrupt.

31. (1.) The word for *thousand* in Hebrew (*elep*) also means *ox*. This may have led to one or two mistakes, if not more.

32. (2.) Marginal comments, and corrections, and the figures heading *haphthoroth*, or liturgical sections, may have become incorporated with the text.

33. (3.) The language of Scripture is popular, not scientific, and we therefore find round numbers used; and in poetical passages there is, no doubt, the same poetic freedom used that we find in the poetry of every age and nation. The man who said he had seen the ceremonies of the 9th of November hundreds of times did not intend to tell a falsehood; he merely employed the popular (and highly incorrect) mode of expressing that he had seen them a greater number of times than he could readily reckon up. So "hundreds," and "thousands," in poetry or *quasi*-poetry, simply mean large companies. Those philosophers who object to popular language must, as I have already hinted, cease to talk of *sunrise* and *sunset*, and of *moonlight* too; they must not think of *shooting* game, because they shoot (O.E. *scytan*, to send forth) the shot, not the animal; they must not say that they string their harps, guitars, or violins, with *catgut*, nor that they place their valuable papers in a *tin* box. If they use such phrases themselves, they must permit the employment of similar modes of expression in the Book which is intended for all men and for all time.

34. (4.) Besides the use of round numbers, there was a tendency on the part of scribes, if not of authors, to employ multiples of the sacred numbers 3, 7, 10. Seventies particularly come under this remark. Indeed, if we may reverently say so, we have the highest sanction for considering them mere symbolic numbers: it was never meant that our forgiveness should cease at the 490th offence.

35. (5.) But the most fertile source of errors in the text of Scripture as regards numbers is the very inartificial manner in which those numbers were represented. There were no special marks to represent numbers, such as we employ; the numerals we call Arabic were used in India at an early period, but were not brought westward till considerably later. The letters of the alphabet were employed to signify units, tens, and hundreds; two dashes or dots after a letter made it represent so many thousands. A smear therefore, or a blot, would raise an authentic into a highly-exaggerated number. Again, numbers might be mistaken for words, and words for numbers; and the letters themselves might be easily mistaken one for another. In the square Hebrew character which we now use, Resh and Daleth, He and Kheth, Teth and Mem, Ghimel and Nun, Zain and Nun final, Mem final and Samech, are very similar; that is, 4 and 200, 5 and 8, 9 and 40, 3 and 50, 7 and 700, 60 and 600, might readily be interchanged. In the Samaritan alphabet, 2, 4, 200 (Beth, Daleth, Resh), 10 and 90 (Yod and Tsade), 9 and 70 (Teth and 'Ain), 1 and 400

(Aleph and Thau), are almost exactly alike; and in the older Hebrew character, Beth, Nun, and Caph, Gimel and Phe, Daleth and Resh, Vau and Thau, Tsade and Shin, are easily confounded.

36. It is worthy of remark, however, that as the LXX. contains all the exaggerated or diminished numbers, and occasionally varies from the received Hebrew text, the great majority of the errors must have crept in before that translation was commenced in the third century before Christ.

37. I have now completed the task I had proposed, namely, to lay before you my reasons for believing that we must not attach any weight to the present Hebrew text of the Old Testament as regards numbers. I believe, as I have already said, that such an opinion is compatible with the most firm belief in the truth of Holy Scripture, as regards the facts recorded therein and the doctrines it teaches, and that it removes a stumbling-block out of the way of many who are weak in the faith. To refuse to examine this opinion, and to decline discussion of the subject, would be to fall into that slavery to manuscripts of which St. Augustin (*De Doct. Chr.*, iii. 5) does not express himself too strongly when he says: "Ea demum est miserabilis animi servitus, signa pro rebus accipere, et supra creaturam corpoream oculum mentis ad hauriendum æternum lumen levare non posse."

The CHAIRMAN.—I call upon you to return thanks to Dr. Thornton for this important and valuable paper; and I shall now be glad to hear any observations which any gentlemen may wish to offer, and I hope we shall have a valuable discussion.

Rev. C. A. Row.—As I may have to leave early to-night, I will take the liberty of commencing the discussion. I am sure we owe great thanks to Dr. Thornton for coming forward to deal with this numerical difficulty, which we all undoubtedly feel. I am not prepared to endorse everything which is contained in this paper; but it is only those who have written and laboured in defence of revelation who know what are the difficulties which are raised both as to things contained in the Scriptures and as to the nature of their inspiration. I do not think it is necessary to accept everything in this paper, but Dr. Thornton has undoubtedly laid his hands on the great bulk of the numerical difficulties of the Old Testament. I do not attach the blame to Moses and to the other inspired writers; but looking on history generally, I may express the feeling that the difficulty with regard to numbers is enormous. In reading the papers which contained the accounts of the American civil war, I never could accept the numbers of those slain in battle as set down on paper; and it yet remains for us to get some accurate account hereafter from reliable sources. When we have to write history, I am satisfied that when the figures are taken

from popular tradition instead of from authentic documents, enormous exaggerations of numbers creep in. Now look at this point a little, for Dr. Thornton has done well to bring it forward. I was born in the year after the battle of Waterloo, and I lived in the immediate vicinity of one of our greatest seaports. I have often spoken there with men who were actively engaged in the great French war, and had there been no literature on that subject, and had I now to sit down and write a history from those men's stories—who were perfectly honest so far as they knew and believed—I should write a history which would be filled with enormous exaggerations. Take one case more. I have myself conversed with persons who took an active part in the defence of Plymouth, when the French and Spanish fleets were off that place. If I were to give an account of that and of the unprepared state of the town from the verbal reports which I have heard, I should write matter which would contain the greatest exaggeration of the real facts. Look at the numbers of men employed in the great French wars. The largest number of men ever moved in the course of those wars was contained in the great expedition of Napoleon into Russia ; but there is a great difference between the estimated numbers on paper and the number of those who were really mustered under the standard. The general idea in this country—the traditional idea—was that those numbers were much greater than they were. It was commonly imagined that the number of men Napoleon had to invade England with was vastly in excess of what the number really was—some 110,000 or 120,000 men. We had an idea that the numbers were enormous. We always thought that one Englishman could easily thrash three Frenchmen (laughter), and when we got into any difficulty in fighting with the French, it was always thought that the number of the enemy must be very large indeed to account for it. Even within the last two years we have very nearly seen a frightful myth introduced into history ; and even with the best information it is often very difficult to keep such things out. I allude to the story of Lord Brougham about the passing of the first Reform Act, which has been refuted by Earl Grey in the life of his father lately published. We are entirely indebted to Earl Grey for abolishing that myth. But I want to go a little further back, and show the general tendency to this sort of thing. At the time of the civil war of Charles I. there were means of obtaining accurate ideas of numbers, but I am unable to accept the numbers which were given in connection with the civil wars of the Roses. Then take the number of those who came over to England with William I. The number is commonly given at 60,000. Now I do not know what Freeman's estimate is, but I do know that Keightley has brought the number down to 20,000. The popular idea, however, is that there were 60,000 men with William, and when you consider that that was half the force which the mighty Napoleon could have brought into the field, that shows how immense is the tendency in the popular mind to exaggerate numbers. The old accounts of such things are simple incredibilities which we cannot at all believe. But I come now to more tangible ground, where we are acquainted with the facts. Any one who has read the first decade of Livy must feel assured that

the numbers given by him are thoroughly and entirely unauthentic. The nations around Rome must have been more prolific than rats and mice, if the numbers are correctly represented. (Laughter.) The account is entirely and purely unbelievable. Go further back, and you find still the same thing. Take the invasion of Greece by Xerxes. Two eminent historians, Thirlwall and Grote, have analysed the numbers said to have been employed by Xerxes in his invasion. Now I apprehend that it is impossible that an invading army should vastly exceed the population of the country itself ; but it is stated that Xerxes carried with him 5,000,000 people, the whole number of his fighting forces amounting to 1,800,000. How would it have been possible to have procured provisions for them ? The moment Xerxes advanced beyond Thermopylæ, he advanced into the native country of his enemy, and it would have been impossible to have got provisions. After the battle of Salamis, the whole number melts into the clouds, and the remnant is found to consist of a very small number indeed. The great difficulty would have been to advance such numbers at all, but after the destruction of the fleet I ask how was it possible in Thessaly to find provisions for such a vast number as between 300,000 and 400,000 ? These numbers show that in all history constructed upon the mere accounts of popular tradition the universal tendency is to exaggerate enormously. Herodotus, who occupied the same position in point of age with regard to the Persian war that I should occupy with regard to the first American war, gives us an account of the Persian war ; and the numbers of the Persians engaged at another battle—the battle of Marathon—are according to him most incredible. He tells us that they were taken out in 600 triremes, which we know were inconvenient vessels for stowage. But I need not go further to show that there is a universal tendency amongst mankind greatly to exaggerate numbers when they cannot derive them from authentic documents. So with regard to the rapid mode employed by Xerxes for computing the size of his army. According to Herodotus, space was made for 1,000 men, and he marched his men into it ; but who can tell whether they filled the space or not, especially as we know that in the late war, when the danger at sea was past, our ships were found to be not half manned, although on paper the number was swelled. I know in one case one person who was supposed to be in the navy fought all his battles in the parsonage-house of my own father. (Laughter.) I know the man who did it. I think I have established the fact that the tendency to exaggerate numbers is unquestionable. With regard to the sacred writers themselves, I think that certain portions of the sacred books have been actually composed out of other previously existing books. I think I take a safe ground in supposing that these numbers might probably have been merely transposed out of other then existing books, out of which the confusion has originated, those previously existing books having been composed not from authentic documents, or careful comparisons of numbers, which we know is very difficult, but from general or popular belief. That would account for some of the great exaggerations contained in the Scriptures. I will not go through all that Dr. Thornton has given us. In the main he has

laid his hand on all the most difficult questions, but there is one he has not mentioned, where we find in the Chronicles that one of the kings of Judah was older than his father by two years. (Laughter.) To those who find miracles in all things that occurrence does not present much difficulty (laughter), but I own I cannot believe it even on the statement of the book of Chronicles. There is another matter in the same book of Chronicles which Dr. Thornton has not alluded to—I mean the numbers of those who fought between Abijah and Jeroboam, when the men of Judah, 400,000 strong, fought the Israelites, who mustered 800,000 men, and killed 500,000 of them. Now these are numbers in our present version of the Bible which I cannot accept. They have got into the text somehow, and if we are really asked to defend these numbers as part of revelation, I say that our common sense will not allow us to do so; because it is impossible that those numbers can be taken as authentic. The greatest of all the difficulties is the one which Dr. Thornton has given the most space to—the numbers of the Exodus—and I have always felt that difficulty to be enormous. I have read Dr. Payne Smith's Bampton Lectures, and every one should do so. Dr. Payne Smith disagrees with Dr. Thornton in thinking that the average number of the families of the Israelites might have been ten children. Dr. Payne Smith expressly says that the families were decidedly small. I cannot go through the evidence of this, but any impartial person who reads Dr. Payne Smith's lectures will be satisfied that the commonly received numbers cannot be taken as correct, and no man can say that Dr. Payne Smith is not an eminently orthodox man. You cannot cry out, "infidelity!"—and yet Dr. Payne Smith says that the number of the descendants of Jacob did not exceed 80,000, and he goes on to show that in the families there were incorporated all the slaves. In Genesis there is the number of Abraham's servants, 318. They went on increasing very materially, and the goods and servants of Abraham descended to Isaac, and the family of Isaac was subsequently divided between Jacob and Esau. Jacob's share increased very largely, and Dr. Payne Smith is of opinion that many persons who had certainly not descended from the loins of Jacob became incorporated with the Israelites. He considers that the Israelites contained a body analogous to the Roman clients and plebs, and that they formed the deleterious element which we meet with so extensively in the Scriptures. The whole question, as commonly received, is involved in great and extreme difficulty. There is another thing I should like to refer to as presenting a great difficulty when one has to defend divine revelation. There are many professed Christians who are fond of introducing an exceptional and vast amount of miracles beyond those which are mentioned in the sacred page, and this is one of the most difficult things we have to encounter in the way of defending Christianity against infidelity. There is an old Greek proverb which is worthy of attention. It used to be said that it was very easy to praise Athenians in the presence of Athenians, but not so easy to praise them in the presence of Lacedemonians. (Laughter.) No doubt it is easy to make out a case in favour of a certain view when people are strongly biassed in its

favour ; but what is to be done with those who are equally biassed on the other side ? (Hear, hear.) Before we go on multiplying miracles beyond any express warrant for them in the Scriptures, we ought really to pause and consider what we are doing in the way of throwing a tremendous stumbling-block in the path of those who feel that there are difficulties in the Scriptures, and who feel that some of them are very great difficulties. It is of the very highest importance that we should attend to this point, because if we multiply miracles in this way, I can see no reason, so far as evidence is concerned, why we should reject the early church miracles, as the miracles of Ambrose, and the rest. (Hear, hear.) Those are miracles that I utterly disbelieve, because miracles have high moral purposes to serve. We do not simply rely upon testimony to prove the miracles of the New Testament ; they bear a moral aspect of a very remarkable character which is a strong argument in their favour. With one or two exceptions, every miracle of our Lord's divine mission is stamped in this way. The miracles, such as are reported in the first four centuries, bear a different aspect from the miracles of our Lord, which are all of a consistent character throughout the Gospels. Compare these miracles with the miracles of the spurious gospels, and it is totally impossible for a rational man to arrive at any other conclusion than that those who originally fabricated these spurious miracles were utterly and hopelessly unable to elaborate the miracles recorded in the genuine gospels. I am very sorry when I hear of men inventing miracles, and I am much obliged to Dr. Thornton for adding the weight of his authority on this important point in the defence of Christianity. The real weight of infidelity does not so much rest on the scientific difficulties as on the alleged moral ones. And I say that the defenders of Christianity have in a great degree themselves created moral difficulties which modern infidelity has only been too glad to seize upon to use in her attacks upon our faith. (Cheers.)

Rev. JOHN JAMES.—I am thankful for the exposition of the various probable ways set forth in this paper, in which errors in point of numbers contained in the Scriptures may have arisen. Dr. Thornton's knowledge of the Samaritan has enabled him to point out to us the close resemblance which exists between the forms of various Hebrew and Samaritan letters, each bearing a different numerical value, and to show us the mistakes which were capable of being made by those who transcribed the manuscripts. I am very grateful for that—I am grateful for the knowledge that even a dash or a dot after a letter might make a difference of thousands in value. For want of that sort of knowledge which Dr. Thornton has to-night given us, I have often been unable, in speaking with those who had difficulties on these points, to support the arguments which I had been using. When Dr. Colenso's papers first came out, the very same argument which we have now had elaborately brought before us, occurred to me, namely, that I was perfectly prepared to suppose that there is great exaggeration in certain parts of the Scriptures, not of an intentional kind, but through some error in the manuscript or on the part of the transcribers. My hypothesis is now abundantly

supported. I can now show more clearly how easily such errors may have arisen. The only difficulty remaining with me is, as to the small number of manuscripts which are reported ever to have existed, and that we have no authentic account of them. It would be a great boon to literature if such an account could be set forth, and if the actual manuscripts which existed during the middle ages and before the time of our Lord could be produced or described. That there were various manuscripts is quite clear to my mind, from the fact, that the Septuagint version, although it agrees with the Hebrew in the main, still does materially differ in some particulars, as in the case of the post-diluvian patriarchs. The Septuagint gives 100 years more to most of these post-diluvians——

The CHAIRMAN.—I think you mean the ante-diluvians.

Mr. JAMES.—No ; I mean post-diluvians.* There are seven or eight generations in which the Septuagint gives 100 years more to each generation than the Hebrew does, and that must have arisen from the fact that the manuscript from which the Septuagint was translated differed from the manuscript from which our translation has been made. I cannot for a moment think that we are warranted in maintaining the absolute integrity of all the numbers given to us. No doubt, at one period of time, there was only one manuscript existing. In the time of Ezra they had only a single copy of the Pentateuch to refer to, and various persons were employed to transcribe from the one existing copy, and, no doubt, in the course of transcription, errors would naturally arise. The great vice of all those writers, such as Dr. Colenso, has been very well pointed out by Dr. Thornton, namely, the way in which they insist on one meaning of a particular text, and that the worst possible meaning. (Hear, hear.) But there are other meanings which bear better authority and which offer no difficulty whatever. Will you allow me to remind the meeting of one great case of the kind ? In the first chapter of Genesis (v. 20) it is recorded that the fishes were created in the water, and it seems in our version as if the birds were also created out of the water. But in the second chapter (v. 19), the birds are said to have been formed “out of the ground.” Now Dr. Colenso points out these two statements as involving a discrepancy of great importance, whereas there is no discrepancy at all ; because the Hebrew in the first chapter does not properly bear the translation which is given in the English version. The correct version is given in the Bible margin. Nevertheless Dr. Colenso will insist upon it, as an argument against the Pentateuch, simply on the ground of our English version, which is acknowledged by all scholars to contain a mis-translation of that passage.

The CHAIRMAN.—I should like to ask Dr. Thornton one question, because he may have to go away early. He speaks in the 36th paragraph of his paper first of the square Hebrew character and of the mistakes which may have

* It is undoubtedly so likewise in the case of several of the antediluvian patriarchs.

resulted from it ; then of the Samaritan alphabet ; and lastly, of the older Hebrew character. Is that different from the Samaritan character ?

Dr. THORNTON.—Oh, very different—something similar to the Phœnician.

The CHAIRMAN.—Is not the Samaritan the same ?

Dr. THORNTON.—Oh no, not at all. The character which we now call Hebrew is the Babylonish ; properly the Chaldee character. But there is a still older character which bears a strong similarity to the Phœnician. It is found in its earliest form, I believe, in some inscriptions in Numidia, in company with Egyptian hieroglyphs. That character is very different from what we call the square Hebrew or the Babylonish character.

Rev. Dr. RIGG.—May I ask where these characters are to be found ?

Dr. THORNTON.—They are preserved on the Maccabean coins, and have been recognized in inscriptions. I think you will find them in the Phœnician inscriptions of Gesenius.

Mr. ROW.—Dr. Payne Smith gives some of them.

The CHAIRMAN.—There is an article in the *Penny Cyclopædia* which gives a representation of the ordinary square Hebrew, and then of the Samaritan, or ancient Hebrew, without making any distinction between the two latter.

Dr. THORNTON.—The Samaritan was one form, but a different form, of Hebrew writing. The older Hebrew form was that which you will find in Gesenius's Phœnician inscriptions, and on coins in the British Museum.

The CHAIRMAN.—The old Hebrew character is the character in which the Samaritan Pentateuch is written ?

Dr. THORNTON.—That is in the Samaritan character.

Dr. RIGG.—There were, in fact, three forms in use among the Hebrews : the ancient Hebrew, the Hebrew equivalent to the Samaritan, and the Chaldee ?

Dr. THORNTON.—Yes ; but the Chaldee was not in use till after the Captivity, the old Hebrew being used before.

The CHAIRMAN.—There is scarcely any more difference between the square Babylonish character and the Samaritan character than there is between our writing and our printing characters. The whole character of the Hebrew square writing is such writing as a man would produce by using a reed ; the other, such as would be produced by incised work, such as cutting inscriptions. In that article in the *Penny Cyclopædia*, to which I have referred, if you trace the Greek character and the Roman character from the ancient Syriac, which they consider the oldest type, there is not so great a difference between the Greek character and the Samaritan as there is between the Samaritan and the square Hebrew. In many instances you will find it is just the sort of character which you get in writing with a pliant reed.

Dr. THORNTON.—The Samaritan in its present state is not similar to the Hebrew.

The CHAIRMAN.—No, there is a great difference ; but if you take the Greek character, which originated from the Phœnician, there is no greater difference than in the square Hebrew derived from the Samaritan.

REV. REGINALD EDWARDS.—Perhaps, as a stranger, I may be permitted to make a few observations on this paper. In the 16th paragraph, Dr. Thornton mentions the number of Israelites who went out of Egypt as being only 600. Now the rest of the paper impresses one so much with his knowledge of the subject, that I am very anxious to know on what ground he arrives at such a calculation. It seems to me that there is a certain amount of contradiction in the matter. Take two simple statements. In the first place we are told that Pharaoh pursued the Israelites with 600 chariots,—the Scriptural account implies that he took an army of horsemen and infantry with him. Now it is impossible that he should have taken such a force, translated into modern language, of ordinary cavalry and infantry in pursuit of a mere body of 600 men. Then again, Dr. Thornton takes $\frac{1}{27}$ th as the yearly increase of the people; and that rather increases my difficulty. That estimate is taken from the ordinary annual rate of increase of the population of France; but is it not notorious that the rate of increase in France is almost absolutely stationary—that it would not represent the increase even in England? Why increase the difficulty by taking France rather than the increase of our own population? I quite agree myself with Dr. Thornton's view, that the number is in all probability wonderfully exaggerated, and how that exaggeration arose I am not Hebrew scholar enough to attempt to explain; but I quite accept the view of Dr. Thornton and of most biblical scholars, that we cannot hold to the numbers of the Old Testament. But why should Dr. Thornton give the weight of his authority to so extraordinary a departure from all the received numbers as that reduction of 600,000 men to 600? If you diminished them by one-half, or by one-tenth, it would be a great diminution; but why go so far as to suppose that the number was so contemptible? I have no doubt Dr. Thornton has some reason for his calculation, and, as a matter of curiosity, I should like to know what it is—

DR. THORNTON.—The reason I have made my calculation as I have is because I suspect the word “thousand,” but I have said “with a retinue of 2,000 or more,” leaving the 600 for the armed warriors. As to the $\frac{1}{27}$ th, I got that from a statement by M. Faa de Bruns, in the preface to Dr. Pusey's *Daniel*. In a note he says, “Take $\frac{1}{27}$ th as the rate of yearly increase.” He founds upon that this argument, that counting Noah and his family, and calculating the increase at $\frac{1}{27}$ th per annum up to the present time, you get about the present population of the earth. I adopt that number—it is very simple; but still I wish to show that the Hebrews must have been propagated rather more rapidly than according to the rate of yearly increase in France—

MR. REDDIE.—But perhaps that is not the present rate of increase. I believe the population of France is almost stationary now.

DR. THORNTON.—The estimate was taken some years ago, I dare say from authentic information, and it was given by Dr. Pusey—

MR. ROW.—In the book of Deuteronomy, Moses says the Hebrews were the fewest of all people.

DR. RIGG.—There is one point that ought to be remembered, that Dr.

Payne Smith's object in his statement and in his note to his lectures is to justify the numbers, on the hypothesis that you are to reckon all the descendants. Dr. Payne Smith's object is not certainly to throw discredit upon the numbers; he simply says, "In reckoning the Hebrews, you are bound to reckon, besides the Hebrew proper of pure blood, all those who were incorporated into the Hebrew families." We should bear that in mind when the force of Dr. Payne Smith's authority is quoted by Mr. Row——

Mr. Row.—I merely quoted him to show that from the loins of Jacob these vast numbers did not descend.

Dr. Rigg.—On the other hand, no doubt Dr. Payne Smith is decidedly in favour of the view that the average increase of the families cannot be reckoned at more than three or four children for every parent, and that is important; for Dr. Payne Smith seems to have paid much attention to the subject, and is unimpeachably orthodox. I cannot help thinking, that on these subjects, what we want is, that some persons of competent ability and sufficient leisure should give themselves to the proper elucidation of the books of the Old Testament. (Hear, hear.) I think that we have, in fact, no exegetical books on the Old Testament in the English language that are worth anything. I do not refer to Dr. Pusey's *Daniel*, because that is a special book with a special object; but as a general rule, you will find what I have stated to be the truth. Compare the exegetical books on the New Testament—such books as Professor Lightfoot's—with anything that we have on the Old Testament. All these objections to numbers would come to nothing if, by true scholarly appreciation and elimination, the real life of the record itself in each of the books of the Old Testament was properly brought out to the appreciation of the students of Scripture. Suppose that an English orthodox divine, of the calibre of the German Ewald, whose faith has not been impaired by the summary dictum that there can be no miracle, had his learning, his power, his immense application, and his intense love for historical research applied to such a subject; if such a man, believing rightly in the existence of a living God, and that He interposes by way of miracle when there is a proper reason for divine interposition; if, I say, such a man were to give himself to the work of elucidating these books of history then the truth coming out in the successive chapters of them, and being made to shine as history and likewise in the light of a consistent moral purpose, I am convinced of this, that all these questions of numbers would fade away. People would say at once, "We cannot accept these numbers as part of the record; they have come to us under circumstances which almost necessitated change and corruption; but they are matters of no moment; they may have been the work of some transcriber, or, if not, at all events, they are no more than the corruptions contained in the classical writers, and which are quite apart from the real worth and substance of the manuscripts themselves." But while things remain as they are, we cling to the idea of the minutely literal verbal inspiration of the Scriptures as we find them, and the consequence is, that a certain amount of disturbance and a certain amount of doubt are engendered where there ought to be no

doubt at all. (Hear, hear.) It has seemed to me for many years that this is the work of all works which needs to be done for our Christian faith. I greatly deplore that our learned universities do not give us men who would bring to the Scriptures the same sort of historical and critical faculty which similar men from the same universities have brought to bear on a number of what we call the profane historians of the ancient world. I hope that before long we shall have something of this sort done, and then we shall make no mountain of these difficulties, which are greatly and studiously exaggerated. If there had been any such thing done with regard to the Pentateuch, many men would not have been led to despair of the truth of the Old Testament from such writings as those of Dr. Colenso.

Rev. Mr. TITCOMB.—Some of the remarks which I had intended to make have been already anticipated. I fully agree with Dr. Rigg as to the great desirableness of further elucidating the great difficulties which we have to encounter in these matters; although I think he rather underrates the importance of those works which do already exist upon the subject. I fear the whole of this discussion must have given pain to some here present, and if not to them, that it will give pain to a large circle of religious people outside. At this stage of the debate, therefore, as well as from my own position as a clergyman, it may be well to try and throw a little comfort into the minds of those whose thoughts may have been disturbed. The popular mind no doubt is completely wedded to the thought that the Bible is of no use unless every syllable is infallibly correct as it stands in the English language. I fully concur with Dr. Thornton in the utter impossibility of holding that view. Now that may be a shock to many persons' feelings. Yet why should it be? For the real truth is that the infallible character of Scripture rests on the original autographs, and not upon their translations. I think Dr. Thornton would, therefore, have worded the title of his paper better if, instead of calling it "On the Numerical System of the Old Testament," he had called it "On the Numerical System of the Hebrew Text of the Old Testament." That would have made the whole thing plainer, and would have put it in a position in which those who hold such strong views would not have felt the same difficulty which they may now feel. The grand truth that the infallibility of the inspired writers in the original autographs is one thing, and the possible fallibility of the present English text is quite another thing, no reasonable man can deny; indeed it is so transparent, not only in regard to numbers, but in other things, that any one of ordinary learning will admit it in a moment. It is, however, attended with this great difficulty, though it is no difficulty to me, that if one syllable in the English Bible be not true, an uneducated man who wants advice may say, "How am I to know that the rest is true?" But out of that difficulty no man on earth can get us. We cannot resist facts. For example, it is stated in the first verse of the sixth chapter of the first book of Kings, that the interval of time between the Exodus and the building of the Temple was 480 years. That is plainly stated in the English Bible, and the date is given as in the fourth year of Solomon's reign. But St. Paul says, in the 13th chapter of the Acts, that

the Judges themselves reigned 450 years ; which leaves only thirty years for the interval of time between the Exodus and the Judges, and for the interval between the end of the reign of the Judges and the building of Solomon's Temple. That there is some fallacy between the two statements is quite clear. It is utterly impossible that the Judges could have reigned 450 years and yet that the whole interval of time between the Exodus and the building of the Temple should have been only 480 years. That is a totally different type of fact from any of those mentioned by Dr. Thornton, but it is very remarkable. There is another difficulty. St. Paul says that the period of the persecution, reckoning from Abraham's going down to Egypt, was 430 years ; but in St. Matthew's genealogy, there are only nine generations between Abraham and Naasson ; and though, of course, there would be a little longer time allowed for each generation than we allow now, still nine generations could scarcely fill up 430 years. But that is a minor point—the first is the great difficulty, and I confess that the only solution of it is what I have indicated, that we certainly have in our version of the Bible some small errors—minute, microscopic in their smallness—on points which are utterly indifferent to the grand purposes of a moral revelation, and which do not in the least degree affect the happiness of mankind. If that be kept in view, it will be the salvation of the Bible against the attacks of modern science. Remember, it is war to the very knife between the Bible and the ungodly infidel science of the day, though science is not necessarily ungodly and infidel—God forbid that we should say that ! Still, in the main, it is war to the knife against Revelation ; and the process by which the war is carried on is by making Revelation ridiculous, through forcing the English text to prove too much. The English text follows the Hebrew. The Septuagint, however, gives 460 years more between Adam and Abraham than the Hebrew text does. Which is right ? Our Lord and the Apostles quoted the Septuagint, and received it as the inspiration of God, and it is incorporated in the Greek texts. Almost all the quotations in the New Testament are taken from it——

Mr. Row.—Not all.

Mr. TITCOMB.—I said almost all. The system of chronology in the one version is one thing, and in the other version it is quite another. How must we decide which is right ? It does not matter which is right. For no human system of chronology is a part of Divine Revelation. When the archæologist tells us, for example, that man is so much older than the Bible says he was, I reply, that the numerical statements of the English Scriptures are to be received as we have discussed them here to-night, as not necessarily any part of the infallibly inspired Word. Nor is it merely a question of numbers. There are other unsettled questions of textual variations. For instance,—there is the introduction, in the genealogy of St. Luke, of a link between Arphaxad and Sala, which is not found in the book of Genesis. In St. Luke it is stated that Arphaxad begat Cainan ; and that gives us a new link not found in Genesis. The chapters and verses are these, if any one wishes to verify them, the eleventh chapter of Genesis, verse 24,

compared with the third chapter of St. Luke, verse 36. What is my inference from that? Simply this, that the inspiration of the spirit of God led St. Luke to incorporate that extra link into the genealogy of his gospel; therefore I receive it as a fact supplementary to the record in Genesis, and so far regard the genealogy in Genesis as defective. One thing or other must be true. If the link is rightly inserted in St. Luke, it must be left out in Genesis. Well, what is the inference I draw? Why, this: if there has been one link left out from Genesis, may there not have been others left out also? I do not say that that is necessary, but it is a kind of thought which gives me comfort. For if I see that in such matters which are utterly indifferent to the purposes of eternal life there are a variety of statements, one more full and another less full; one appearing a little exaggerated and another appearing incomplete, I fall back on the recollection that these things have nothing to do with the grand moral and spiritual truths of Revelation.

MR. LAW.—I should like to ask Mr. Titcomb one question: Is not the link which he mentions as found in St. Luke also found in the Septuagint? Then, as to the alteration in the Hebrew text of the post-diluvian chronology. The Hebrew text detracts 100 years from every generation; it appears to be a very systematic withdrawal of 100 years from what is stated in the Septuagint. Perhaps that might form an interesting question——

THE CHAIRMAN.—You mean ante-diluvian, I suppose?

MR. LAW.—No; it only appears in the post-diluvian chronology.

MR. BROOKE, V.-P.—Mr. Titcomb has anticipated one remark I was going to make, that these disputed numbers are not at all essential. But there is another great difficulty obviously in the way of those who hold that the literal acceptance of the numerical statements of Scripture is a necessity of the inspiration of Scripture. Those who hold that view seem to me to introduce much greater difficulties than they obviate; for it is evident that in some cases the numbers cannot be accepted, without at the same time we assume miraculous interpositions. It is difficult to conceive that there would be any circumstances which would necessitate the immediate destruction of 50,000 people; it seems so foreign to the general course of Divine interposition in regard to mankind. We must not introduce unnecessary miracles, or we shall be landed in a very great difficulty indeed.

MR. REDDIE.—I should not have risen at this late hour at all, were it not for the feeling that many people will be pained by this paper, however carefully it has been put before us; and it is desirable, if there are any other facts which may be offered in explanation or modification, that they should now be stated, in order that Dr. Thornton may be able to deal with them in his reply, for, though he has now left us, he will be enabled to make a written reply. Mr. Edwards pointed out one difficulty or objection to Dr. Thornton's taking one of the lowest birth-rates by which to modify the number of the Israelites. But his further argument was open to some sort of answer which Dr. Thornton did not notice. Mr. Edwards argued that 600 chariots, with a proportionate number of other horsemen and foot-soldiers, would not have been sent after so small a number of Israelites. But

Dr. Thornton may suppose that the 600 chariots are as likely to be an error in number as the other——

Mr. EDWARDS.—He did not say so.

Mr. REDDIE.—No ; but it is just as likely——

The CHAIRMAN.—I think he said the very reverse.

Dr. RIGG.—He said that was not too great.

Mr. REDDIE.—Well, he conceded this to me, *sotto voce*——

The CHAIRMAN.—He says that these 600 were exceedingly probable ; that there was no difficulty in that.

Dr. RIGG.—No more than in the war-chariots in the other case.

Mr. REDDIE.—Well, be that as it may, I leave it to him to answer. There is, I think, less weight in Dr. Thornton's objection about the sacrifices. Granting that there may be some exaggeration in the numbers of the sheep and oxen sacrificed, I do not think it follows that they were all offered in the Temple. One or two might be offered there, and in that way you get over the difficulty as to the size of Solomon's Temple. If you consider that the whole of its interior was overlaid with gold, it could not have been a very extensive building, without almost accepting the immense quantities of gold to which Dr. Thornton objects——

Mr. Row.—But the Mosaic institutions positively required that the sacrifice should be made in the Temple.

Mr. REDDIE.—Yes ; in the court of the Temple, but not in the Temple itself, or literally, in the presence of all the people. That argument has been used against Dr. Colenso already. A certain number were there—a general turn-out of the people—what we should call “all London” in popular language. In the third paragraph of the paper, Dr. Thornton refers to the word *rakia*, as given by the Septuagint, with the meaning of something solid, instead of “extension.” But in the margin of our English Bibles we have “expansion” put for it, and that is better——

Mr. Row.—Dr. Payne Smith has adopted the word “expanse” in his new translation of the first chapter.

Mr. REDDIE.—One other difficulty Dr. Thornton has made more of than he need—the getting rid of the quantities of the bodies that were slain. I quite admit that the numbers given are probably largely exaggerated, but in the case of the pestilence which cut off thousands of the people, and in other cases, the Jews would naturally resort to cremation, or burning the bodies. They would not allow a pestilence to arise from the collection of dead bodies. There is only one other point which arose in the discussion which I should like to notice. I would ask whether, in the discrepancy which Mr. Titcomb points out between the period of the Judges and the building of the Temple, St. Paul's statement might not refer to the dispensation of the Judges and not mean the time during which they reigned?——

Mr. TITCOMB.—No ; he speaks distinctly of the Judges until the time of Samuel and the prophets. He makes it quite clear.

Mr. REDDIE.—This is what I mean ; that there was no prophet——

Mr. TITCOMB.—He says there were 450 years.

Mr. EDWARDS.—Samuel himself is distinctly called a judge. You may carry down the life of Samuel to the life of David himself.

Mr. TITCOMB.—Grant it all ; but still the period in the wilderness would be more than thirty years.

Mr. EDWARDS.—But if Joshua was the first judge and Samuel the last——

Mr. TITCOMB.—Joshua could not be considered a judge.

Mr. EDWARDS.—Why not ?

Mr. TITCOMB.—Joshua was the captain of the Lord's host.

Mr. EDWARDS.—But was he not a judge ?

Mr. TITCOMB.—Oh, no.

Mr. REDDIE.—Dr. Thornton will no doubt pay attention to all this in his reply, and give a satisfactory solution of the difficulty. Mr. Row has already mentioned that he did not agree with Dr. Thornton in the passage where he speaks of the upholders of Masoretic tradition. I thoroughly agree with Mr. Row, and I think this part of Dr. Thornton's paper is against his own view. You need not give up that Masoretic tradition because these errors of numbers are better explained in the 33rd and 35th paragraphs by blots and smears, &c. There is also one point in Mr. Row's remarks that it will be as well to notice. He talked of the tendency to exaggeration in profane history, and he gave us an example. He spoke of the fleet during the Russian war being only half-manned——

Mr. Row.—Not the Russian war ; I said the great French war.

Mr. REDDIE.—I thought you referred to the Russian war ; and as I have heard pretty much the same thing before, I was going to correct the error. We had 147,000 men at the time it seems Mr. Row was speaking of—the very largest number we ever had in our navy. At the time of the Russian war the same thing was said ; but it could only mean that our men were not half trained—that they were not thorough sailors—as to numbers we had enough. I ought also to notice that the *Aboukir*, mentioned by Dr. Thornton, in comparison with the ark, is not a good specimen of our largest ships. Admiral Halsted will tell us that we have ships half as large again, if not even greater in size than that. The ark corresponded almost exactly with the dimensions of the *Great Eastern*, which is 600 feet long ; and it has always been considered as a sort of indirect testimony to the supernatural knowledge of Noah, that he should have constructed a vessel corresponding so well with the greatest triumph of modern scientific shipbuilding——

The CHAIRMAN.—Was not the *Great Eastern* taken from Noah's dimensions ?

Mr. REDDIE.—I think not. It was only afterwards discovered that there was this extraordinary coincidence in their dimensions and proportions.

Mr. TITCOMB.—The true state of the case with regard to the Judges is very important ; and it is no use for us to put our heads under the sand, like the ostriches, thinking that no one sees us. In the 19th verse of the 13th chapter of the Acts these words occur :—

“And when he had destroyed seven nations in the land of Canaan he divided their land to them by lot,”

That brings us to the first of the Judges ; and then it goes on to say :—

“And after that he gave unto them judges about the space of four hundred and fifty years, until Samuel the prophet.”

In the clearest way, therefore, St. Paul says that the Judges reigned 450 years until Samuel——

Mr. REDDIE.—With the qualification of “about.”

Admiral HALSTED.—I feel very grateful to Mr. Titcomb, for he has apprehended rightly that there are many laymen here to whom this paper has given great pain. It has broken up, but it has not resettled, and I do not find any comfort or consolation from anything stated in the concluding portions of the paper. Far more comfort may be derived from what has been stated by Mr. Titcomb. As to the question of all these discrepancies or incredibilities of numbers with regard to arms, being tested by the circumstances of modern warfare, that is simply childish and ignorant.

The CHAIRMAN.—I do not think this subject is altogether a novel one, for I think that all the objections of Dr. Colenso against the Pentateuch are very old ones revived, and they have been answered over and over again. These discrepancies of numbers have long been known by students of Hebrew and of the Scriptures generally ; and the very points which Dr. Thornton has given us as showing how these discrepancies are to be accounted for, have also been given so far back as Dr. Kennicott's time. When we come to the history of the Pentateuch, we are astonished how marvellously that text has been preserved for us. We have that text which is used by the Jews now, as handed down by jealous tradition ; and we have another text which they have guarded most jealously for 2,000 and more years. We have a translation of that text commenced, if not completed, well nigh three centuries before the time of our blessed Lord Himself, and we have that version in Greek jealously preserved by the Alexandrine Jews as against the other Jews up to the time of our Lord, containing a very important preface, which, if it had not been for that Septuagint, would have been said to have been concocted after the time of our Lord Himself. And in addition to that we have the Pentateuch jealously guarded by a class of people in opposition to the Jews of Samaria, and they have preserved it for us up to the present day. The Prince of Wales, when in the East, was shown one jealously guarded copy, and we are told of the superstitious reverence and fear with which the old priests unrolled that, which was one of the oldest copies, for they dared not venture to bring out the oldest of all. Those copies were preserved by a sect who were in complete antagonism to the Jews long before the time of our Saviour. Then we have the Septuagint, for 1,800 years and more, jealously guarded by Christian sects, the heretics fighting one against the other, and the Jews watching them. Then we can trace the passage of the Pentateuch from the Samaritan version into the Sinaitic version, for that is only the Hebrew Pentateuch written in the old character which they used on their coinage, a different character from that in use by the Jews themselves since the Captivity, but showing that the Pentateuch before the time of the Babylonish captivity

was substantially what it is now. When we compare the three versions, we find scarcely any discrepancy worthy of note. There are no great discrepancies between those three copies—the original Hebrew text, as handed down by Hebrew tradition; the Hebrew of the Pentateuch, as preserved in the Samaritan character; and the translation of the Pentateuch which we have in the Septuagint. There may be differences here and there, but are they more than would have been likely to occur in manuscripts so handed down? They are not greater than those in the manuscripts handed down of the New Testament—

Mr. Row.—I cannot agree with you there. The variations are very large.

The CHAIRMAN.—Well, are they greater than in the manuscript of the Septuagint itself?

Mr. Row.—Undoubtedly.

The CHAIRMAN.—Well, I hope people will look at the matter for themselves and judge for themselves. I have recently gone over them—

Mr. Row.—I am speaking of the Septuagint.

The CHAIRMAN.—I will confine myself to the Pentateuch, and this may be thrown out for the comfort of many people: let them compare the different versions, and they will not find anything to try their faith. Where do we find these discrepancies? Simply in matters affecting numbers. Are there no discrepancies as to facts between the Septuagint, the Samaritan, and the Hebrew versions? There are no discrepancies as to facts at all except with regard to numbers. Now there must have been some cause for that. With regard to the discrepancies in point of numbers there must also have been some reason for it, and it is pointed out by Dr. Kennicott and insisted on by Dr. Thornton, though not with the same force that he might have brought to it. What would be the errors in manuscripts now if, instead of using the Arabic system of notation, we used the Roman system? Take the variations that there are in Roman notation—the C with and without a stroke, and the D—how easily discrepancies might arise in the use of such a system. I do not see why people should be much disturbed even if we do find that there are discrepancies in these numbers—they could only be reasonably expected. But at the same time we should be very cautious not to give way too much to exaggerating these difficulties, and in that respect Dr. Thornton has given greater prominence to such difficulties than I think he need have done. Dr. Thornton tells us that he sees no difficulty in the pursuing force of the Egyptians following the Israelites across the Red Sea having 600 chariots, while he reduces the number of armed men on the side of the Israelites to 600 by his own interpretation. And as he has before admitted the probable correctness of Abraham having 318 armed retainers, I cannot understand how, if Abraham could have 318 soldiers at his command, there should only have been 600 men to go out of Egypt. Dr. Payne Smith pointed out at the University of Oxford, and he also pointed out at Zion College, immediately after Dr. Colenso's book appeared, that people when they come to these points always want to restrict you to the absolute progeny arising from the loins of Abraham, when you have the fact patent

before you that Abraham was a great sheik before he had a son, with 318 trained men, and that he increased in man-servants and maid-servants, while Jacob was marvellously blessed in the same way. Are we to suppose that the Israelites alone went into Egypt, and that their retainers did not follow them? There must have been a marvellous diminution of the retainers, if we are to suppose that Jacob was reduced merely to his own progeny—

Admiral HALSTED.—Esau met Jacob with 400 men.

The CHAIRMAN.—Yes, and they were increasing and being blessed. This shows how difficulties may be exaggerated. Dr. Thornton has adopted the popular interpretation in saying that the children of Israel were only 210 years in Egypt. I know the difficulty of what St. Paul says, but if any one will candidly investigate all the facts, remembering the positive prophecy to Abraham that his people were to be afflicted in a foreign land for 400 years, the time must be fixed at more than 210 years, or otherwise you have to say that the people were afflicted for the whole period during which Abraham and his descendants were wandering before they went up to Egypt—

Mr. TITCOMB.—How about the generations? because that is an important element in the matter.

The CHAIRMAN.—I think it is consistent with the 400 years and perfectly explicable, and I think a very interesting paper might be written to show that the children of Israel were at least 400 years in Egypt. At the same time, while quite admitting the accuracy of the New Testament, and that there are no greater difficulties here than in other places where they can be fairly met, still I am not prepared to admit this point now, and I think it can be made to bear the interpretation which I have put upon it—

Mr. REDDIE.—Perhaps you will give us a note to your speech on this point when it is published.

The CHAIRMAN.—With regard to the increase of the population, people forget how differently population increases under certain circumstances. We have a great difference between the population here and the population in France. The population in France under certain circumstances is nearly stationary, while our own country is like a teeming hive, sending yearly thousands of people to America, distributing them over Australia, and nearly over the whole face of the New World. Suppose you give up the period of 400 years for this nation—a very large tribe; not 70 individuals merely, but a considerable tribe—going up to Egypt; and they being blessed with great fecundity, we want to know what may have been their increase. Let me point out the circumstances of our own country. What has this country done in 200 years? What population has it sent out? How many have gone out to North America and South America? How many to other lands? How many to Australia? If this fact of the increase of the population of this little island, and the marvellous population it has sent out to India and to every other quarter of the globe, were in the course of 400 years, and as a matter of history, to be compared with some authentic history of France, it would be pronounced perfectly ridiculous. The increase of population is

dependent in the main on the quantity of food and the means of supplying it to the people. If you have great wars decimating the people, then you have it as a known fact that triplets and twins become almost as common as single births were before. It is very dangerous indeed to argue rashly in regard to numbers. There has been one great crux in the New Testament with regard to St. Luke's assertion that Cyrenius was governor of Syria when Caesar Augustus taxed the world. I was lately talking to the Bishop of Gloucester and Bristol, and he mentioned that he had used that point as a warning to some young men just ordained, and to show them how careful they ought to be not to have their faith upset. He said that in his day at college there was much difficulty in that passage, and none of the explanations given by the tutors would hold water. There were many ways proposed of getting out of the difficulty without making out that St. Luke had made a grievous blunder in stating that Cyrenius was governor of Syria some thirteen years before he actually was governor. It was found that that statement did not square with the statements contained in the approved archives of Roman history, and therefore the passage was twisted and tortured to bear anything but a common sense interpretation. Here was a great difficulty—how was it to be solved? But some man at last set to work——

Dr. Rigg.—Zumpt.

The CHAIRMAN.—Well, he made an investigation which does not agree with that in Smith's Dictionary of the Bible; but he examined some of the by-ways of Roman history, and he came upon the curious fact that there was the governor of a certain province about this time who was removed from his governorship, and the governor of the neighbouring province undertook his duties and was *de jure* governor for the time being of that province——

Mr. Row.—What is your authority for that?

The CHAIRMAN.—I am stating what the Bishop told me——

Mr. Row.—It is directly in the teeth of Tacitus.

The CHAIRMAN.—Well, I do not think Bishop Ellicott is likely to be mistaken in a matter of this kind. I only give you the statement for what it is worth. I have not got the authorities by me. I merely make a *vivâ voce* statement of what I heard in conversation. It turned out that Cyrenius was at that time governor of the neighbouring province, and the person who investigated the matter distinguished himself by going through a host of authorities, and finding the fact out in some out-of-the-way part of history and not in anything which is so commonly known as Tacitus. It was discovered that Cyrenius was at last actually made governor of Syria when he had been doing the duties of that office for something like fifteen years. He was rewarded at last for what he had done by being made the nominal governor where he had only been the virtual governor before, and he was then removed to the richer province. I merely give that as an instance to show how serious difficulties may be removed with a little knowledge. There

is one class of discrepancies in numbers which is of very great importance. It may be found in Bishop Kennicott's book ; but as that book is very rare, it may also be found, quoted, in Dr. Adam Clarke's Commentaries. A series of difficulties in numbers was drawn up with regard to the age and period of Jacob, there being thirteen or fourteen difficulties of chronology, if you take it for granted that Jacob only served in the whole twenty years with Laban. But Bishop Kennicott pointed out that these difficulties might be removed by supposing that Jacob was not twenty but forty years with Laban. That removed every difficulty. If you refer to Dr. Kennicott, as quoted by Dr. Adam Clarke, you will find that those difficulties were as serious as any which have been brought before us to-night. He takes this passage from the 38th verse of the 31st chapter of Genesis :—

“This twenty years have I been with thee: thy ewes and thy she-goats have not cast their young, and the rams of thy flock have I not eaten.”

And it goes on in the 41st verse :—

“Thus have I been twenty years in thy house ; I served thee fourteen years for thy two daughters, and six years for thy cattle.”

Dr. Kennicott points out that a certain Hebrew pronoun is there used which in other parts means reduplication, and he interprets it :—“Thus twenty years have I served thee and twenty years have I served thee,” and he shows how the reduplication is in accordance with the use of that pronoun, and that wherever it occurs in the Old Testament it always means double the time specified. It may be met by saying that Gesenius says that that is not a good interpretation ; but he had a strong bias not to clear up difficulties in the Bible, but to increase them. Upon the construction to be placed on the Hebrew pronoun, Dr. Kennicott, when we remember what he has done for Hebrew literature, may be taken to be quite as good an authority as Gesenius, especially when he gives you facts with regard to which no other interpretation can be borne. There is just one other point I should like to mention. A constant taunt has been thrown out for a long time about the borrowing by the Israelites from the Egyptians. Dr. Kennicott has settled that by showing that the same word which has been translated “borrowed,” means also “prayed for,” “asked for.” They had gone to a foreign land by the invitation of the king of that foreign land, and he had taken them as a token of his gratitude for the preservation of the lives of himself and of his people, but his successors unjustly punished them and made them slaves, and God determined that they should have their full wages for their labour, and they were told to ask the Egyptians for their jewels, and the Egyptians were willing to give them. Dr. Kennicott asks those who will not accept the word “pray,” instead of “borrow,” whether they will translate the passage in the psalm, “Borrow for the peace of Jerusalem ?” (Laughter.)

The meeting was then adjourned.

REPLY BY DR. THORNTON.

My professional duties, joined with the unaccommodating habits of railway trains, having compelled me to leave before the end of the discussion, I am constrained to make my reply in writing. A reply I can scarcely call it; for every speaker but one seems to have fully comprehended my object, and to be at one with me on the general principle. To that one (Admiral Halsted) I would say:—Do not mistake me; my object is not to undermine, but to confirm faith. I am, and wish every one else to be, a firm and stout believer in the Bible, as being all of it, from beginning to end, the word of God to men, precious and true. But in face of objections to this written word, which I, as a professed teacher of it, hear made from time to time, I feel myself obliged to ask, Are we sure that the text we now have is the word of God as originally written?—and I have ventured to lay this answer before the Institute, to serve as a guide to us in our mode of defending the Word: “As regards facts, doctrines, moral and spiritual teaching, undoubtedly yes; as regards mere numbers, no.” I cannot imagine how such an answer can give to any one who considers it fairly any pain, but the uneasiness which always accompanies more or less the reception of a suggestion contravening what one has been content to hold for a long time without examination. It was a saying, I believe, of Napoleon, that one cannot make omelettes without breaking eggs; and we must in this matter think more of the omelette we are making than of the eggs it is our painful duty to break. Here is an acknowledged difficulty, which prevents some from believing as we do, and as we wish others to do. Ought it to remain a difficulty? Is it a matter we are bound to contend for? If not, we are leaving a removable stumbling-block in a brother's way, which is the next thing to putting it there.

For the details of my own criticism I shall not contend one moment. I am not wedded to them. If Mr. Edwards thinks—if any member of the Institute thinks—that my removal of three ciphers from the 600,000 Israelites reduced the number too much, let us say 6,000, or 60,000; but all I want is, that thinking believers should not hold it imperative for a wavering Christian to be compelled to admit that two millions of people passed through the Red Sea in a night. I wish to be able to say to such a man, “Provided you allow that God did miraculously bring *some* people out of Egypt through the Red Sea, never mind about the ciphers.” So as regards the 600 chariots of Pharaoh, I do not think it unlikely that he had 600, and sent them all after the fugitives, few as they may have been. But possibly he did not; and I take no objection to read sixty, or even six.

There is one difficulty to which I have not alluded in my paper, and feel bound to mention here. The numbers of those who died in the matter of Peor are put by St. Paul at 23,000 (εἰκοσιτρεῖς χιλιάδες), 1 Cor. x. 8. I

frankly avow my disbelief of the genuineness of *χιλιάδες*, though found in MSS. ABCD8. The original passage in Num. xxv. 9 has 24,000. Here we see St. Paul does not give the same number ; and I understand the fact to be that a *smiting* (*maggephah*), not a *plague*, of the chief men took place, according to the direction in verse 4. Two men were killed out of each tribe ; and St. Paul says twenty-three, because he omits the Simeonite killed by Phinehas.

As to the question raised by Mr. Titcomb, and left for me by Mr. Reddie, respecting the period of the Judges, I decline the subject, as I have already done in paragraph 10 of my paper. It belongs to biblical chronology.

I must remark, in conclusion, that those who differ from me in other points will agree with me in this, that a paper has not been altogether useless which has been happy enough to bring out such valuable speeches as those of Mr. Titcomb and the Chairman.

REMARKS by the Rev. C. GRAHAM on the Rev. Dr. THORNTON'S
 Paper *On the Numerical System of the Old Testament*, read
 7th February, 1870.

I HAD not the pleasure of being present at the reading of the Rev. Dr. Thornton's paper. In Exod. xii. 37, it is stated, "And the children of Israel journeyed from Rameses to Succoth, about six hundred thousand on foot that were men, beside children." In section 16 of his paper, Dr. Thornton says, "The words translated six hundred thousand might, by a little straining, be rendered one thousand six hundred. This number of adult males would imply a total population of about 6,000, a manageable number. But I must frankly avow my belief that the word thousand, *eleph*, is an insertion; and that the subsequent numbers have been amplified by some similar misunderstanding; that 600 armed warriors, with a retinue of 2,000 or more, escaped from Goshen, crossed the Red Sea, and wandered and died in the desert." In the discussion on the paper, Dr. Thornton's "belief" that *eleph*, thousand, is an insertion, seems to have been somewhat shaken; for, in his reply, he says, "If Mr. Edwards thinks—if any member of the Institute thinks—that my removal of three ciphers from the 600,000 Israelites reduced the number too much, let us say 6,000, or 60,000; but all I want is, that thinking believers should not hold it imperative for a wavering Christian to be compelled to admit that two millions of people passed through the Red Sea in a night."

With Dr. Thornton, I think that we must not *compel* belief. At the same time, I think it highly desirable to lead the "wavering Christian" into the accurate knowledge of truth. I may say here, that I believe the difficulties attending the acceptance of Dr. Thornton's view to be ten times greater than those which he tries to remove. I do not, indeed, admit that the acceptance of Exod. xii. 37 involves any real difficulty.

If the view, that only a few thousand persons left Egypt under Moses be correct, the entire history of the Exodus dwindles down into comparative insignificance; and all those scriptures which magnify it as a deliverance on a grand and extensive scale must be regarded as exaggerations.

In section 12, Dr. Thornton shows that 600,000 men at the Exodus is an increase of the descendants of Jacob in Egypt not at all impossible. He justly remarks also, that "we are given to understand, that the Israelites in Egypt were exceptionally blessed with issue." If, then, they were exceptionally blessed with issue, and the number 600,000 a "possible" increase, why reject the statement of Exod. xii. 37, that that was the number which came out of Egypt?

But in rejecting Exod. xii. 37, we have much more to reject. In Exod. xxxviii. 25, 26, where every male, from twenty years old and upward, paid a half-shekel of redemption-money, which was employed in the erection of the Tabernacle, those who paid were 603,550. The silver paid in was 100 talents and 1,775 shekels. Any one who wishes to see how exactly the sum of the money and the number of the persons correspond, will do well to consult Dr. A. Clarke *in loco*. On the supposition that only a few thousand persons came out of Egypt, we have to reject the statement that such a sum was paid by them in half-shekels, or was employed in the erection of the Tabernacle.

In his note on Exod. xii. 37, Dr. Kitto remarks: "Dr. Boothroyd and others think there must be an error in the numbers. It might be so understood if it were an unconnected text; but the reading here is supported by a whole series of distinct enumerations in Numbers, chap. i., the sum of which, exclusive of the tribe of Levi, amounts to 603,550. This was at the commencement of the second year from the Exodus, and exhibits a detailed coincidence which precludes the idea of corruption, whether accidental or wilful, in the present text, unless we are prepared to admit the corruption of a whole series of numbers in the census of Numb. i., and also in that of Numb. xxvi."

In Numb. xi. 21, we have Moses saying to God, "The people among whom I am, are six hundred thousand footmen, and thou hast said, I will give them flesh, that they may eat a whole month. Shall the flocks and the herds be slain for them to suffice them? or shall all the fish of the sea be gathered together for them to suffice them? And the Lord said unto Moses, Is the Lord's hand waxed short? thou shalt see now whether my word shall come to pass unto thee or not." Substitute a few thousand for the six hundred thousand footmen of the text, and I submit, not only is the text itself rejected without reason, but what is sublime approaches the ridiculous.

But it is not alone such passages as these in the Old Testament that we must impugn; by such criticism, we are obliged to reject what is equally clear and definite in the New. In 1 Cor. x. 8, of those who were under the cloud and passed through the sea, the apostle Paul tells us, there fell in one day 23,000. The original text in this passage is agreed on all hands to be genuine. In Numb. xxv. 9, however, 24,000 are said to have fallen. But this number is naturally regarded as embracing those who were slain by the command of God. Dr. Thornton advances no evidence against the genuineness of the Greek text in this place. He simply rejects it. Casting away the thousands (*χίλιαδες*) he reduces Paul's number to 23. On this method of dealing with the originals, I should like to know how we can be certain of the genuineness of any passage from Genesis to Revelation.

But the principle adopted in the paper will not alone affect the numbers of the Exodus, it will necessitate the rejection of much beside. In Gen. xli. 3, God says to Jacob, "Fear not to go down into Egypt; for I will there make of thee a great nation." In Deut. xxvi. 5, we find the offering of first-fruits instituted to be a memorial of this increase. On presenting it

before the altar, the offerer is commanded to say, "A Syrian ready to perish was my father, and he went down into Egypt and sojourned there with a few, and became there a nation, great, mighty, and populous." Accepting the statement that only a few thousand persons came out of Egypt by Moses, we must reject both the promise in Genesis and the declaration of its fulfilment in Deuteronomy, and regard the offering of the basket of first-fruits as the seal set on a mere exaggeration.

So greatly had Israel multiplied before the Exodus, that the reigning Pharaoh said, "They be mightier than we." He dreaded lest war should arise, and they should take part with his enemies, and so escape from his yoke. It is distinctly stated also that the more he oppressed them the more they increased. When Moses was afterwards sent to deliver them, Pharaoh said, "Behold, the people of the land now are many, and ye make them rest from their burdens." But let us, for argument's sake, suppose that only a few thousand people came out of Egypt under Moses. How will this accord with the subsequent history? They went out with a servile spirit. Amalek, a formidable enemy, attacks them in Rephidim, and is defeated. This does not look like the act of a few slaves. Balak, king of Moab, fears to attack them, and sends to the Euphrates for Balaam to curse them. From the high places of Baal Balaam sees them, and exclaims, "From the top of the rocks I see him, and from the hills I behold him; lo, the people shall dwell alone, and shall not be reckoned among the nations. Who can count the dust of Jacob, and the number of the fourth part of Israel?" Supposing that Balaam was struck with the greatness of the multitude of Israel, and on that account prophesied favourably, Balak takes him to where he could only see a part of them. Again, Balaam prophesies, "God brought him out of Egypt; he hath, as it were, the strength of a unicorn. . . . Behold the people shall rise up as a great lion, and lift up himself as a young lion: he shall not lie down till he eat of the prey, and drink the blood of the slain." He sees them a third time, abiding in their tents according to their tribes, and he exclaims, "How goodly are thy tents, O Jacob, and thy tabernacles, O Israel! As the valleys are they spread forth, as gardens by the river's side. . . . His seed shall be in many waters. . . . He couched, he lay down as a lion, and as a great lion: who shall rouse him up? (Numb. xxiii. xxiv.) Balak, not able to fight Israel from their numbers, seduces them to idolatry, and so brings upon them the judgment in which 24,000 perish. Take the statement in Numb. xxv., substantially confirmed by the apostle Paul in the New Testament, with the declarations of Balaam, and there is perfect consistency.

By-and-by, Sihon, king of the Amorites, and Og, the king of Bashan, are attacked by these few slaves, vanquished and slain. The giant cities of Bashan are taken and occupied by two and a half of their tribes, and out of these tribes, "About forty thousand prepared for war passed over before the Lord unto battle, to the plains of Jericho" (Josh. iv. 13). Surely, it must be an oversight of Dr. Thornton, when he says (sect. 20), "The book of Joshua presents no numerical difficulties to the reader." On his own showing,

if only a few thousand escaped from Egypt, two and a half tribes could not have sent 40,000 armed men over the Jordan. Yet this number is not too great a proportion for those tribes, when we consider all that was achieved on the west of the Jordan in Palestine proper. Jericho and Ai are taken and destroyed. Against Ai, a small city, 3,000 are first sent and defeated. Then an ambush of 30,000 is despatched ; while the main body is led on by Joshua. I cannot see how Dr. Thornton can admit these facts consistently with his hypothesis. So numerous are the Israelites represented in Joshua, that the Hivites, who possessed four important cities, practise subtilty to make a league with them. Soon the kings of the south come against the Hivites to punish them for the alliance. They are overthrown, pursued with terrible slaughter, and their fenced cities taken and destroyed. "And Joshua smote them from Kadesh-barnea even unto Gaza, and all the country of Goshen, even unto Gibeon. And all these kings and their land did Joshua take at one time" (Josh. x. 41, 42).

Soon after the great victory of Beth-horon, and the slaughter of the kings of the south, they meet Jabin, king of Hazor, and all the kings of the north, at the waters of Merom. Here, again, their triumph is complete. Thus from Lebanon in the north, to Kadesh-barnea in the south, Joshua subdued the country, and smote thirty-one kings, inclusive of Sihon and Og. Each of these occupied at least one defenced city, and possessed a portion of territory around it. Some of them reigned over many cities. Now, accept the hypothesis that only a few thousand Israelites left Egypt, and you certainly do not improve the credibility of the sacred narrative. I can believe the different testimonies in the Pentateuch as to the numbers, in Exod. xii. 37, for I find in them consistency, and consistency too with the numbers of Joshua acknowledged to be correct ; but the supposition of the paper I cannot reconcile with the numbers, the promises, or the history of Scripture.

It gives me pleasure to strengthen my argument by the testimony of Professor Edward Harold Browne. I quote from his book, "The Pentateuch and the Elohistie Psalms, in reply to Bishop Colenzo. Five lectures delivered in the University of Cambridge." London : 1863.

"If the Israelites really took possession of the land of Canaan by conquest and the sword, destroying fenced cities, driving out the inhabitants, natives of a mountain country, with a civilization, however corrupted, yet very far in advance of their own ; it is evident that the numbers in which they came cannot be so very much over-stated in the Pentateuch. A little band of fugitive slaves, unarmed and unaccustomed to war, must have either fallen before their enemies, or exchanged their bondage in Egypt for a still viler bondage among the Canaanites and Perizzites. It would need even greater miracles than those related in the book of Exodus to account for their occupation of the Holy Land, if such only had been their numbers and such their preparation for the war. Tribes in the condition of Israel under Moses, do not conquer a country as the British conquered India, by first landing in small numbers upon it, establishing a footing, and then step by step advancing till the whole land has become imperceptibly subject to them. So a highly-civilized outwits a semi-barbarous race. But the history of rude

races overrunning regions inhabited by the civilized and effeminate, is invariably the history of large armies and hordes like locusts, which cannot be resisted, from the very momentum of their numbers. If, then, we would have as few marvels as possible in the history of the Israelites, we are compelled to fall back on the belief that they must have been multitudinous. And not only multitudinous, but well trained, and hardy too. Even large numbers untrained would have been insufficient for the work. The slavish spirit was not extinct among them, when the spies came back from the land, and reported that 'They saw giants, the sons of Anak, there (Numb. xiv. 1) ; but the generation that had grown up under Moses in the forty years of wandering, could say to Joshua, 'All things that thou commandest us we will do, and whithersoever thou sendest us we will go . . . only be strong and of a good courage' (Josh. i. 16-18). Six hundred thousand men, sons though they were of the Egyptian fugitives, yet themselves trained up in the hardy habits of the desert and the mountain, the wild herdsman and the wilder hunter of the wild goat and the antelope, even though wholly composed of footmen, may have been a formidable force to bring against the fenced cities, and the hill forts, and the horsemen, and the war chariots of the Canaanites, and the Amorites, and the Hittites, and the Perizzites, and the Hivites (?) and the Jebusites (Exod. xxiii. 2). But neither small numbers nor a hasty flight from the place of their captivity can tally with what are the undoubted phenomena of the history." (Lect. V. pp. 77, 78.)

The difficulty suggested by Dr. Thornton as to the burial of 24,000 corpses in the desert in the course of a few days is really no difficulty at all. How often have larger numbers, fallen on the field of battle, been interred in comparatively small spaces without producing plague ?

Again, as to the smallness of the dimensions of the temple. Dr. Thornton himself suggests the answer—it was simply a centre of worship, not a house for the people to assemble in. It was the palace of their king, and they worshipped "toward his holy temple."

"What boots it at one gate to make defence, and at another to let in the foe ?"

That errors, through the similarity of the Hebrew letters—if letters were originally used for numbers, as is supposed—and from the mistakes of copyists, &c., have crept into the numbers in the historic books of the Old Testament, in several instances, no student of Scripture, so far as I am aware, denies. But this is a different admission from the sweeping statement "that there is reason for thinking the numbers as read in our text of the Old Testament to be corrupt."

ORDINARY MEETING, 21ST FEBRUARY, 1870.

THE REV. DR. ROBINSON THORNTON, VICE-PRESIDENT, IN THE
CHAIR.

The Minutes of the last Meeting were read and confirmed.

The Secretary announced that Mr. Herbert James, H.M.C.S., had been elected a member of the Institute.

Professor KIRK then read the following paper :—

ON SPONTANEOUS GENERATION; or, THE PROBLEM
OF LIFE. By the Rev. JOHN KIRK, Professor of Practical
Theology in the Evangelical Union Academy, Glasgow;
M.V.I.

THE idea which one forms of that which is called *Life* will be essentially varied according to the surrounding ideas in the midst of which it is formed. If these surrounding ideas represent strictly material objects and their affections, the idea of life will be essentially different from that which is formed when surrounding ideas represent immaterial objects and their affections. Where all substances are excluded from the thoughts but such as can be seen, or in some other way directly perceived through the senses, the idea of life will be one thought; where those substances which exist, and which make their existence perfectly manifest to reason, though they cannot be seen, are fully taken into view, the idea of life will be a very different thought.

2. I make this preliminary remark, because my definition of life must be one thing if I speak of it in strict materialism, and it must be a totally different thing if I speak of it according to the full truth and reason of the case. *Life, as it is seen*, is a movement, and nothing more. It is nothing but a movement to any of the five senses. Every movement is not life, but every instance of life may be resolved into movement only if we go no further than the senses enable us to go in our thoughts of living objects. But there is something about the movement which we call "life" which is accessible to the

eye, and yet brings us to the verge of the seen, if not really into the unseen. Life in an object is *self-movement*. No one thinks of an object as alive merely because it is in motion; it must move itself in order to be *alive* even to the eye, or to any other organ of sense. Whether it is the life of animal or of vegetable, in order to be life at all, it must be motion having its true origin in the living animal or plant. It must not merely be moved—it must move itself. Mechanical movements are not life; magnetic movements and chemical combinations, however forcible, are not life. You may call them by that name, but you cannot think of them in the true thought, even in materialism, which belongs to life itself.

3. It is this self-moving which constrains us to reason about life as we never dream of reasoning about any other form of motion. It is this which compels us logically to look beyond the region of observation to which the material eye and lens are confined, and with another eye which needs no microscope to see, so to speak, that which neither telescope nor microscope can reveal. *Thoughts* cannot be seen by means of the microscope, yet thoughts are surely as real as the movements of vibrios; that which thinks cannot be purified by being passed through potassium, yet it is as real as the air which may be so affected; the substances which think cannot be “resolved” by the telescope, yet they are at least as truly existent as the nebulæ. When fairly in the midst of true thoughts, such as surround the idea of life, we speak of it as a *force* and not as a movement. It is now no longer motion, but that power which moves. The problem of life, then, is not the problem of a movement, but of a faculty. It takes us back beyond the motion which can be seen to the *motive entity* which cannot be seen.

4. To pure materialism, the dormant seed or germ is not alive. It is not in motion, and that which is not in motion in strict materialism is not living. A materialist regards a fresh though dormant seed as alive; but when he does so, he departs from his materialism. He goes beyond “phenomena,” for there is no such phenomenon as lets life be seen so long as there is no visible movement in the germ. Place that germ under the microscope while as yet it is not affected by the conditions of growth, and there is nothing to be seen which tells of actual life. The strictest materialist knows that there is life there—that there is something essentially the opposite of that which is where the germ has been deprived of its vitality. That something is life; but he does not know it—he cannot possibly know it—except by reasoning, which informs of that which cannot be seen or in any way subjected

to the senses. It is not at all needful to regret such an inconsistency or to confine ourselves to *seen life*.

5. To generate is to give beginning. Used in such a discussion as that in which we are at present engaged, generation means the giving of a beginning to life or self-movement in an individual plant or animal. Spontaneous generation literally would mean to give such a beginning to oneself, and would of course be absurd. But the phrase is not used literally. The idea which it is intended to represent is that of the lifeless giving origin to the living. The inorganic is thought of as giving origin to the organic, and the vegetable as giving origin to the animal. It is true that as yet the only notion which evolutionists attempt to support is that of previously organic molecules giving origin to individual life, and the vegetable thus generating the animal; but that is of no value to their system of thought apart from the truly inorganic generating the organic, at least in the vegetable. The chain of evolution is incomplete and useless to their purpose until this link is forged and inserted.

6. Darwin speaks of the creation of a few forms, or of one; but if the notion of those who hold to really molecular generation held good, he would have no need for such a thought. Here, for example, is an infusion of hay, and it has been so treated that all truly organic existence in it is held to be destroyed. If it could only now be fairly regarded as inorganic matter,—if living plants, however small, could be seen springing into existence from it, and if these mere plants could be seen uniting themselves and becoming self-moving animals, what a grand commencement would here be made for the Darwinian theory! It wants only sufficient time, and the films that become molecules, these molecules that become vibrios, these vibrios that become higher forms, and these higher forms that become higher still, shall reach the human form at last! The symmetry of the notion is perfect. The mischief-maker in the case is that enemy of all mere notions—stern old Fact. It is no doubt wonderful how this old foe is evaded, and even wheedled into something like acquiescence for a time; but ever and again, like Galileo on the earth's motion, he spoils the sport by assertions that damage the whole structure of fond fancy.

7. Let us try, by means of some suitable illustration, to have a good, clear view of this notion as to the origin of life. Perhaps we cannot get a better than that which is found in the case of a grave Professor who is an enthusiast in this same notion. It is far better to take one who is on the positive side in favour of a fancy, and to take his facts and arguments,

than to take one who is on the negative side and opposed. Well, this gentleman has his students around him and a first-rate microscope on the table. He has before him an infusion of hay as well as infusions of certain other substances, vegetable and animal. Let us attend to that of hay. The dried grass has been steeped for a considerable time in water; the infusion has been boiled pretty thoroughly. It has been carefully excluded from all contact with ordinary atmospheric air, that substance having been admitted to it through such media as must effectually exclude or destroy all germs of plants or animals which it might contain. The infusion has been kept bottled up for some months, to give time to the process of generation. A thin scum now floats on the surface of this infusion. With the point of a needle, the Professor or an assistant lifts the smallest portion of this film and places it under the object-glass of the microscope. This fragment is now seen by some, though not by all who look through the instrument, to consist of a mass of minute molecules, some of them so small as to be called "the minutest visible points," and others, of the larger sort, "one thirty-thousandth part of an inch in diameter"! If the observation is continued long enough, or repeated at proper times, these molecules are seen to unite in twos and threes and fours, and up to eights. By-and-by self-moving creatures are said to be the result of these unions of molecules, and it is concluded that life without parentage has taken place. These first creatures die, and a new film is formed on the infusion, from which another set of animalcules are developed; these die, and another set come, and so on. This is clearly the evolution of higher forms from the ashes of lower going on in the microscopic world! Here I simply condense the long descriptions of the authors who write on this side of the subject.*

8. What, then, has old, stern Fact, and his equally severe friend Logic, to say in such a case? Their attention is inevitably turned to the *hay*. The substance infused, and whose infusion is boiled, is dried grass. No one, we should think, doubts that such a substance is full of the minute germs of both vegetable and animal life. "But boiling must destroy all such germs." Ah! there's the point. You say that no one doubts that the heat of boiling water, and cold at zero, destroy all animal and vegetable life. Then "no one" must be a rather sensible fellow, for his doubts are inevitable as the logical sequence of the very facts presented. Both vegetable and

* Professor Bennett's pamphlet has the best epitome of the subject I have seen.—(*The Atmospheric Germ Theory*, &c. A. & C. Black. Edinburgh. 1868.)

animal life, you say, appear after boiling for hours, and hence it is plain fact that they are *not destroyed*! Look steadily at that infusion. Before boiling it teems with infusorial being. It is boiled for six hours—for twenty-four if you choose—all animal and vegetable life, you say, must now be destroyed. You let it stand, however, for a time, and both animal and vegetable life appear. You insist that these living creatures are not produced from germs that have come in from without into this infusion. What, then, is the inevitable conclusion? Simply that the boiling has not done what you say it *must* have done.

9. There is no call to have recourse to germs in the atmosphere so long as the infusion in hand is either vegetable or animal, or so long as it has in it what we all know it to have had, a vegetable or animal existence. Pouchet, for example, plunges a flask into a decoction of barley which had been boiling for six hours, the flask was stoppered in the liquid and plunged in melted sealing-wax immediately on being taken out full. In six days yeast was observed in the flask. Was there ever a more logical conclusion from any fact than that six hours' boiling does not destroy the vegetating power of the yeast-germs in a decoction of barley? It is not merely because vegetation appears, but the very vegetation is seen which would have appeared had the barley been only steeped and not boiled. But the same error runs through all the arguments brought to bear in favour of this theory of generation. The decoctions boiled or chilled to zero do not bring forth only one kind of life. Each infusion has its own product. The doctrine that "life must spring from life" is that which this school of science seeks to refute; but how can it be refuted by such facts as distinctly establish this very doctrine, so far as they prove anything. In these experiments living substance—alive so far as the infusoria are concerned, though dead as to larger forms—is boiled or chilled, as we have said. Well, vegetable substance is living substance whose infusorial life boiling or chilling below zero fails to destroy; animal substance is living substance, whose infusorial life these processes fail to destroy. We say so in the light of all the facts which these men advance on the simple principle of common-sense, that when, in spite of boiling and chilling, specific life is still found in the substances, it is not destroyed. What sort of experiment is required so as to be of the slightest use on such a doctrine as this? Clearly, an experiment in which substance that has not lived shall be seen passing into life.

10. The importance of the controversy lies in its bearing on materialism. Does true life reside in matter that can be

seen, or does it reside only in substance which, from its very nature, cannot be seen? That which can be seen is capable of those affections which are now resolved into modes of motion. All these affections are produced from without the substances thus affected—the affections of life are from within, and not from without. They stand in the strong contrast of direct opposition to all such affections as colour, or any of its kindred. Are they, notwithstanding this, affections of a substance identical with that which never changes from within at all? The effort of the advocates who plead in favour of molecular generation is to prove that they are,—the difficulties that stand in their way are such as go to prove that they are affections of a substance which has no quality in common with matter strictly so called. If any substance in which life had never resided, or from which it could be demonstrated that all life had been utterly removed, could be seen to become alive of its own accord, we might then begin to consider whether life is only an affection of matter. But if what are only thought to be the ashes of that which has lived, and which is held to be now dead, should begin to move with true life, we see no reason to imagine that living substance has there been evolved from that which had no life. There is ample room among all such “ashes” for abundance of living substance so fine as even in the material particles connected with it to be invisible under the highest microscopical powers. It would be so far otherwise if that which had never lived should become truly alive. But it never does.

11. There is a very patent error by which the advocates of this evolution notion are strangely misled. They stop at the *ovum*, or *seed*, in going back to find the origin of life in the individual animal or plant; or, if they go further, they stop at the *cell*. Now it is clear, from the nature of the case, that we must go beyond the cell, and the aggregating molecules too, if we would go to the true origin. To show what I mean, let us take a seed which has just sprung into its first shoot. We presume that no one imagines that there is either seed or germinating cell yet in that shoot. The formation of such a seed or cell is yet distant in the growth and maturing of that plant. There will by-and-by be buds, and all things necessary to propagation, but these are not yet. At least, no one can imagine his seeing them with even the most powerful of microscopes. What, then, lies between that stage in the history of this plant and that further stage at which germ-cells are formed and seeds matured? Clearly, there must be stages at which films shall be formed whose molecules shall be aggregated till the germs of future individuals are complete. This must be

the case in the history of the largest as well as in that of the smallest creatures. The mammoth tree and the elephant alike must have sprung from something less visible than even a molecule in the parent tree and the parent animal. But that does not in the slightest degree affect the doctrine that life is derived only from life. When Professor Bennett says that "no one can doubt that an aggregation of molecules produces a vibrio, which, at first motionless, has contractility communicated to it, and thereby lives," he forgets that if the molecules are self-moving they are alive; he makes the strange blunder of imagining that life is not as essential to the self-aggregation of the molecules as to the contraction of the vibrio. The film in which the molecules are found, as he presents it, is living as truly as the vibrio that issues from the aggregation of molecules—it is so in the same sense of the term living, as that in which anything self-moving, however slowly, is living. The diffused substance from which this film comes is living at first in the same sense, and it passes through the heat of boiling alive, just as any living thing passes through any ordeal which is not destructive of its peculiar life. Whatever the substance is from which this film arises, it is clearly a substance in which there is a life indestructible by heat at the boiling point, and it is as clearly a substance that lived before in vegetable and animal forms, just as any larger substance that is now a seed lived in the individual plant whose seed it is. This is the plain teaching of the facts as presented, and instead of refuting it establishes the law that all life comes from life.

12. When, moreover, the generation of vibrios perishes, and another film rises to the surface, it is gratuitous to conclude that this has come from the ashes of these vibrios. If a mass of vegetable soil is turned over at a certain season of the year, one kind of plants will soon appear on it. When these have come and died another class will appear, and so on, just as the conditions change. This is exactly the same as that which occurs with the infusion on which the advocate of spontaneous generation is experimenting. And yet no one imagines that one class of plants, in such a case, is developed from the ashes of that which grew before it, without seed of its own kind being in the soil. This is true of animals as well as of plants. One class of insects come and go before another, and yet no one thinks of the one arising from the dust of the other. If we take one of Pouchet's experiments, quoted by Professor Bennett, we may see more clearly still how this reasoning applies. "If an infusion be placed in a deep glass vessel, which again stands in the centre of a shallow vessel, containing

the same infusion, and the whole covered with a large bell glass, it will be found in eight days that on the surface of the former are numerous ciliated animalcules, while on that of the latter only bacteria and vibrios exist. The experiment may be reversed, for if the shallow vessel be filled to the brim, and the deep vessel has only its bottom covered, then the ciliated microzoa will appear in the former, and the non-ciliated in the latter." What does this prove beyond the well-known truth that certain creatures will be developed in shallow water, and others only in deep water? The salmon seeks the bed of the shallow stream, on which to spawn, while other fishes seek deeper bottoms, because their ova are hatched best in different situations. What has this to do with the origin of life in matter whose organized character has been destroyed? It shows only the well-known truth that in varied conditions forms of life are variously brought forth—that the seed of a fir-tree will grow where that of a palm will lie dormant.

13. Professor Bennett says that "the conclusion which we must arrive at, therefore, is that the molecules seen on the surface of infusions out of which animalcules and fungi are produced, are not derived from the air." Here I can so far agree with him. But he says:—"Neither can they be supposed to pre-exist in the fluid, as then they would be readily seen, which they never are at the commencement. On this point nothing can be clearer than the microscopical evidence."* What are Dr. Bennett's own words in another communication of his on this very point? He says, "The ultimate molecule has never been reached, even with the highest magnifying powers. In the same manner that the astronomer with his telescope resolves nebulae into clusters of stars, and sees other nebulae beyond them, so the histologist, with his microscope, magnifies molecules into gemmules, and sees further molecules come into view."† Here, then, is a portion of the film which is taken from the surface of the infusion, and placed under the microscope. It is magnified into molecules. One of these is seen to unite with another, and two unite with a third, these with a fourth, and so on. But "the first change visible to the eye," he says, is a slight "*opalescence*." Let us note this slight "*opalescence*."‡ Previous to this change nothing is seen in the infusion, but soon after this change has taken place, under high magnifying powers molecules may be seen. What, then, is the nature of the clear evidence that these

* *The Atmospheric Germ Theory*, p. 17.

† Paper "On the Molecular Theory of Generation," from the Proceedings of the Royal Society of Edinburgh, p. 2.

‡ *The Atmospheric Germ Theory*, p. 8.

molecules did not exist previously in the infusion? Simply *they were not seen in it!* The ultimate molecule has never been seen—some of these same molecules are barely visible,—and yet, because, previous to a change by which they appear, they did not appear, therefore they did not exist! The infusion has had twelve hours to work in, and yet, when it has gone on with its secret process, and reached that stage of up-building at which its products become visible, the existence of these very products previous to their being visible is denied? This is surely lame logic.

14. Not only is there absolutely no evidence of the non-existence of the molecules—there is clear and positive evidence that the process in which they appear is one of gradual enlargement. They come into view one after another, and increase in size when they have appeared. It is not imagined that they do so by coming nearer to the eye, or better into focus, and it can only be by enlargement. All analogy leads us to interpret the facts as those which indicate that the germs of these vibrios are small enough to elude the highest magnifying powers yet employed. The effect of a spermatozoid on the molecules of the yolk of an egg is identical with the effect produced on the molecules in the film on the surface of an infusion. There is not the very slightest evidence that, though unseen, there are not spermatozooids affecting the molecules, which Dr. Bennett and his friends see formed into vibrios.

15. Dr. Allen Thomson says that “most physiologists are inclined to reject as fanciful and inaccurate the alleged observations of the actual conversion of particles of organized or organic matter into living infusoria.”* This is a part of the field in which it would be presumptive for me to judge, but it is not necessary to do so. Taking the “observations,” as we have done, from one of the very staunchest advocates of the notion of life springing from that in which there is no life, it is not difficult to see that, if the observations are ever so correct, the reasoning from these observations is utterly wrong.

16. How far then does this effort to refute the doctrine that “all life comes from life,” tend to enlighten us as to the great problem of life itself? It carries us in, we shall say, from the self-moving force observed in the large animal to that force seen in the self-moving molecule; does it then modify in any degree our idea of the self-moving faculty itself? Has the microscope, by enabling us to see molecules forming themselves into vibrios, brought us any nearer to an answer to

* *Cyclopædia of Anatomy and Physiology*, vol. v. p. 10. 1859.

the question as to what it is by the exercise of which molecules or men perform their movements? What we call the inorganic matter of the world moves only as those forces that affect it are brought to bear upon its particles, or molecules if you will. The living being, be it plant or animal, is capable of moving itself into the current of those forces by which it is affected. A hailstone is melted when the sun shines upon it; but it does not move itself into the sun's rays, as even a petal does by opening itself up when the sun is shining. It is this self-moving that tells us of life. Heat can be so introduced into the dying body as apparently (if not really) to pass into what may be called life; but it is not such life that is of deepest interest. It is that life by which heat may be produced at will by the living agent. We want to get at the true explanation of the difference between these two movements—that which is an effect and that which is a cause. It is no use telling us that there is no such thing as a cause in the sense in which we use the term. You may just as well tell us there is nothing. Even the molecule that moves up to another molecule and joins it compels us to think of something, which is not an effect in the sense in which the rolling of a stone in the river is one. The microscope takes us down to a region where men fancy that they see the passing of the organic into the inorganic, but they demonstrate rather by what they tell us that no such passing is to be seen. Life belongs to a creation of its own—a creation which is using the inorganic, as the inorganic is constantly taking back, as it were, that which the living have used. What is that grand distinction which separates these two creations?

17. We must lay aside the microscope and have recourse to thinking instead of seeing, in order to our having the reply. We must get rid of the fancy of "contractility," which can be seen, and turn to that which contracts and manages the contraction so as even to convey thought from man to man. The miser may as well tell the robber that there is no money in his house because it is not yet to be seen, as philosophers (so-called) may tell us that there is nothing but molecules and protoplasm in plants and animals because they can see nothing else with a magnifying power of 2,000 diameters. There is a spirit of the beast that goeth downward, and a spirit of man that goeth upward, though neither can be brought under the lens. That spirit is living in the beast, and so is the superior spirit in the man. In so far as there is true self-movement in the plant, there is a spirit there too. There is no satisfactory solution of the problem of life, if we exclude this spirit or self-moving entity.

18. It may no doubt be said that we are uttering merely the result of a prejudice. But from whence does that so-called prejudice arise? Our inner consciousness is as real as our eyesight. In that consciousness there is a distinction made, whether we will or not, between our volitions and our material movements. He who, for example, wills as usual to lift his arm, or to move his tongue, and finds he cannot, has a sad proof of the distinction. The will is left, but the muscular capacity is gone. It would be very difficult indeed to disabuse him of the thought that the willing substance is one and the contracting, or rather non-contracting, muscles another. Man is not all sense, and hence he is incapable of confining himself to what are called "phenomena." It is only trifling to try so to confine him by calling the facts of his consciousness by bad names. It is not in our power to confound the movements which originate in our wills, or rather in ourselves as creatures capable of volition, with those that affect us independently or in spite of ourselves. So, neither is it possible for us to explain similar movements in other creatures as caused in these from without, when we see them in those movements clearly self-moving. We repel the charge of prejudice and appeal to the facts of consciousness. We conclude, therefore, that self-motion, or life, resides in the immaterial, and is not to be explained any more than originated by mere molecular evolution.

19. It is here that nature conducts us to the world of true spirit, and lifts us above the material. True science will not allow us to stay among the molecules—it forces us beyond, unless we refuse altogether to be conducted by the truth. This appears very clearly when we compare the most lifelike movements of inorganic matter with that which is really and properly life. Take magnetism for an example. The motions of the needle of a magnetic telegraph look to the ordinary spectator wonderfully lifelike. And yet they are utterly dependent on the motions of the living hand which regulates them. Take the still more lifelike movements of elasticity seen in the pointers of the watch. These look automatic indeed, and yet they are precisely what the living agency causes them to be by which the machinery has been fashioned and wound. Take any of the wonderful combinations of chemistry, and the "behaviour" of certain substances is wonderfully lifelike, but all absolutely *caused* and *modified* as the manipulator determines. The instant you come to real life, if it should be seen even in a molecule, there is self-determination. That self-determination is limited, it is true, but it is real within its limits. No power of mine can order it as that power easily orders in its minutest motions all other force. It is this which gives the problem of

life its deep and intense interest, and links it on to a world of being, no part of which is subject to either the microscope or the telescope, or to any other instrument that deals with purely material things, small or great. What an interest to the "histologist" is there in a vibrio that only "wriggles"! And all just because it is not "wriggled," but "wriggles"! What an interest in the fungus that grows and dies, and leaves its spores that grow and die and leave spores again! Why such an interest even in the plant? Because it is a thing of life that does its own upbuilding, and cannot have that upbuilding done for it by any creature skill. It is seen even in molecules that do their own work, and cannot be helped in doing it by any agency of human kind. It is not wonderful that men are more interested in this life than in any other thing in nature. From the self-moving will within a man himself, down through all wills, to that of the molecule (that seems to have one also), there is perceived to be something of kinship of an irresistibly interesting character. We call it LIFE. It is not God, but it is something even in the molecule that moves of itself (if molecules do), that tells us of Him as no inanimate thing tells us. It is something which no skill of man can imitate, except in the most clumsy of counterfeits. The automaton of human workmanship does mathematically what its mover causes it to do. It does not move an atom of itself. The most humble of living things does a certain amount of work of its own. You rightly trace the motions of a man to their ultimate source in his own will; so do you rightly trace the motions of a ciliated animalcule, or even the wriggings of a vibrio.

20. It is the perception of this which makes us impatient of that worship of "phenomena" by which men are so fond of chaining themselves down to the miserable materialism which believes in nothing but what it sees. *We cannot see true life.* We can see the phenomena of life, but that is not the life of which these are the phenomena. We can see magnetism, for magnetism is itself nothing but a certain motion in that which is affected magnetically. A magnetic current is, I believe, just like a gravitating current, such as that of water, and both may be seen. Even in the case of the motion in water caused by the cilia of an animalcule, you can see the motion of the water and the motion of the cilia, but you see the motion of the water caused by that of the cilia, and you perceive the motion of the cilia caused by something which you cannot see. Reason *will* go beyond the seen in such phenomena as this. It is no use talking of "antecedents and consequents" when we have come to a consequent which has either no ante-

cedent or which must have an unseen one. If you will talk of "antecedents" at all here you must grant this unseen one and stop there. The will is an antecedent that in true philosophy has none to convert it in turn into a consequent. Here, then, we must get beyond the material; and when we are fairly into the immaterial as a real world of being, we soon see Him who not only lives, but who also gives life—who not only moves himself and moves others, but who gives that wonderful capability of self-movement which alone is truly life. You may call that which has the capacity of self-movement "mind," or you may hesitate to apply the word "mind" in such a way as that it should be applied to even the lowest of living things; but name it as you may, it is a substance totally different from merely movable substances, such as has no capacity of self-movement whatever; and when we name this living being—what perhaps Professor Huxley, if he once saw it, would call the protoplasm of spirit,—we have the field in which to go forward investigating the true natural history of life from its lowest to its highest manifestations as these are made known in Him who is the source of all.

21. Let the student of life be well aware that should he surrender the truth at that point at which self-movement begins, and allow the bald chemistry of unbelief to cheat him out of his faith in the unseen but real substance of spirit, he will not soon repair his loss. Even in studies purely natural he will proceed at a disadvantage never sufficiently to be deplored; and when we think of the inseparable connection that exists between the natural and moral, as well as between the natural and highest spiritual realities, he will find himself groping in darkness where light is more precious than gold. On the other hand, let him hold fast to the truth which carries him up from that which is seen, by the most gentle steps which the soul can tread, and he will find natural studies explicable in the highest sense; he will see the loftiest reasons for moral goodness; and, what is best of all, he will find the Father of mercies, and recognize the manifestation of that Father in Immanuel.

The CHAIRMAN.—I think I may take it upon myself to express to Professor Kirk the satisfaction which we all feel at seeing him here among us (hear, hear); and also our gratitude to him for those valuable papers of his which have already appeared in our *Journal of Transactions*. We possess now another contribution from him of equal value with those which have gone before. I must ask you to return thanks to Professor Kirk for what he has already done for us, and especially for the valuable, thoughtful, and useful paper which he has read to us this evening. (Cheers.)

Mr. BROOKE, V.P.—I have been very much gratified by this paper of Professor Kirk's, and although I have not heard the whole of it here to-night, I may say that I carefully read it all before I entered this room. I must fully endorse the conclusions at which Mr. Kirk has so ably arrived; but it occurred to me while the latter part of the paper was being read, to offer just one illustration which may not be unacceptable, of the fact that the non-visibility of matter in a fluid is no proof whatever of its non-existence. Many years ago the late Professor Faraday gave me a bottle containing a clear, transparent fluid of a reddish-purple tint. Now that fluid was known to contain gold—it was water, in fact, in which gold was suspended in an extremely minutely subdivided form, and Professor Faraday gave me the bottle in order that I might subject it to a careful microscopic examination, to see if the highest power of the microscope could detect material particles of gold in it. The little gold particles were so evenly distributed that they remained suspended in the fluid and did not subside, but they simply communicated to the water that purple tint which gold possesses when viewed in transmitted light. If you take a piece of gold leaf between two plates of glass and look through it, you will find that it freely transmits light of a purple colour. I submitted the fluid to the very highest powers which the microscope presents. It was magnified up to 6,000 diameters, which is about as high a power as can be commanded, and still there was not the slightest trace of any visible particles. You could not trace the particles, but yet you knew they were there. Now that very fluid, after my examination had satisfied me that the gold was not discoverable by any visual means, was set by in the bottle for a year or two. At the end of that time I found that a little sediment had settled at the bottom of the water; and that sediment presented all the appearance of gold dust in a minutely divided state. But the water was no longer capable by shaking of being restored to its former colour—the bottle merely contained a mixture of visible particles of gold with water. Because at first no microscopic investigation could detect the particles, it might have been said that they did not exist in the water; but they manifestly did exist there, although the microscope was wholly unable to detect their material presence. This is a familiar and palpable example of the fact, that molecules or particles of matter not being visible is not the slightest evidence of their non-existence. Now it is very important that in so valuable a paper as the one now before us there should not be the least departure from logical deduction; but there are one or two points in the paper on which I should like to make a few observations. In the second paragraph Professor Kirk speaks of life in an object as “self-movement.” Now I should rather take exception to that definition, of the fact of movement being taken as fundamental evidence of individual life. For example, the cells of ciliated epithelium which may be stripped off the back part of the throat, will be found under the microscope to consist of little ciliated particles, which will move about by ciliary action in the fluid in which they are suspended; but we can no more consider them to be individual organisms, or to possess individual life, than we can suppose the effete particles of epidermis

which are constantly rubbed off the surface of the skin to possess individual vitality. They are particles which have served their purpose and are thrown off, but are no more living individuals because they move about, than would be bits of hair or any other perfectly effete portion of the animal frame——

MR. REDDIE.—Then their movement is mechanical ?

MR. BROOKE.—That I am not prepared to say, but it does exist. The movement does exist, and it is mechanical certainly ; but whence the motion is derived, and what are the causes of ciliary motion, I do not take upon myself to define. I can only point to the fact that we cannot take self-movement of itself as an evidence of life or individual vitality.

MR. REDDIE.—But you do not take Professor Kirk's own qualification of the definition. He says, not that all movement is life, but only that where there is life there must be self-movement.

PROFESSOR KIRK.—I do not say that all movement is life, but that all *self-movement* is.

MR. BROOKE.—But I say that we must not go to movement as an evidence of the existence of life. In the 18th paragraph of the paper Professor Kirk says :—

“ Our inner consciousness is as real as our eyesight. In that consciousness there is a distinction made, whether we will or not, between our volitions and our material movements. He who, for example, wills as usual to lift his arm or to move his tongue, and finds he cannot, has a sad proof of the distinction. The will is left, but the muscular capacity is gone.”

Now I must take exception to that as a matter of fact. In the case of paralysis, where the power of moving the tongue, for example, is entirely lost, it does not follow that the muscular capacity is gone—it is only that the medium of communication between the mind and the muscle is damaged, and volition is no longer transmitted to the muscle. The directing influence of the brain is no longer transmitted ; but it does not therefore follow that the muscular capacity is gone. That point in the 18th paragraph should be borne in mind as one which is not strictly accurate. Then in the 20th paragraph Professor Kirk says :—

“ You may call that which has the capacity of self-movement ‘ mind.’ ”

Now I do not think you can apply that term to the capacity of self-movement. I would rather define mind to be the power of combining ideas. I think the best definition of mind that can be given is simply that of the power of comparing and associating ideas ; and we cannot apply the term “ mind ” exactly in the way that Professor Kirk here suggests. I take the liberty of making these one or two observations as not at all interfering with the general scope and argument of the paper, but as pointing out one or two matters of inaccuracy which it would be desirable to modify. So far, however, as the general conclusions of the paper go, I am most happy to give my full and complete adherence to them. (Cheers.)

MR. REDDIE.—I think it may not be uninteresting, as following Mr. Brooke's valuable remarks, to point out, with reference to the colouring of water by invisible particles of gold, that it is by means of particles of gold

and other metals that the richest tints in coloured glass are produced. If gold could always be used, it would produce a very rich carmine or crimson tint ; but it is too expensive, and metals are used producing tints approximating to it, like the older and richest tones of stained glass, as found in our old cathedrals, and which tones our artists now imitate with very great success. The reason why I asked if the ciliary motion, referred to by Mr. Brooke, is mechanical, was because, if the matter is positively dead, I do not see how any movement can arise unless in the same way that a piece of paper in the air is moved about, mechanically, in consequence of its shape. With reference to Professor Kirk's paper, I agree with what has already been said as to its great value. I think it is as carefully written, although a shorter paper, than any of the others with which Professor Kirk has hitherto favoured us. There is, however, one part of it to which possibly our opponents will take exception, and therefore, perhaps, Professor Kirk will not be sorry to have it noticed, though it looks almost hypercritical to point it out. In the 11th paragraph Mr. Kirk says :—

“ When Professor Bennett says that ‘ no one can doubt that an aggregation of molecules produces a vibrio, which, at first motionless, has contractility communicated to it, and thereby lives,’ he forgets that if the molecules are self-moving they are alive ; he makes the strange blunder of imagining that life is not as essential to the self-aggregation of the molecules as to the contraction of the vibrio.”

I fancy that that “ self-aggregation ” Professor Bennett would say arises merely from the attraction of the particles to one another. So that the result would be that in time there would be an aggregation of particles which would be inseparable except by some chemical means, producing isolation. There is one other part of the paper where a similar remark occurs, and where our opponents would argue that these things were merely drawn together, and then began to live. They do not explain whether the cells are of different characters or not—perhaps they may be male and female, and so produce generation. That is a very remarkable fact which Professor Kirk calls attention to—that boiling does not destroy the life of these animalcules ; but we have plenty of illustrations of an analogous kind to enable us to understand this. A few years ago people would have said it was almost impossible to stand the heat of a Turkish bath, where you may have boiling water alongside of you. Chantrey also went into his oven where he baked his models at a heat of some 300 degrees ; and there was a famous “ fire-eater ” at one time who used to exhibit, and have ducks roasted by his side in an oven, and afterwards ate them, and he suffered nothing from this heat. It is not only true that boiling will not destroy life in these animalcules, but we have also learnt from Dr. Carpenter that you cannot even squeeze the life out of them ! Dr. Carpenter, as is well known, has recently been exploring the ocean-bed of the Atlantic. Formerly it was given out among scientific men, that animal life could not exist at a depth of 300 yards, or less than a quarter of a mile ; but now we find that they live at a depth of three or four miles down, where the pressure is so great that the tubes of the

thermometers used to obtain the temperature were actually compressed, so that there was an artificial heat assigned to the temperature from that cause. Yet animal life was going on there to a very great extent. Of the many specimens found alive and healthy, some were found to be occupying tracts with an arctic climate, and some in a much warmer temperature; and these variations were found not far apart from each other, and on the same ocean-bottom. Another important discovery is said to have been made at the same time: they discovered what was supposed to be an extinct species of animal fauna at the bottom of the sea, and it was found that those animals could live without vegetables. It used to be supposed that "protoplasm" required to be passed through a vegetable form before animal life could live upon it; but Dr. Carpenter told us, a few days ago, at the Royal Institution, that a great many of these creatures were found living where there was no vegetable pabulum for them at all. And no sooner is that supposed to be discovered (for it does not follow that vegetable matter does not exist there) than we also find it discovered, that there is diffused protoplasm in the sea itself; and that the animals get their vegetable food supplied for them in the water of the ocean! I have not read anything in print about this, and my statement is therefore necessarily a little vague; but what I tell you is substantially correct,—that there is a diffused protoplasm—a sort of mixture of the constituents of protoplasm—in the ocean at these depths, which the animals can appropriate and live upon without the intervention of any vegetable media. Now that is very important with reference to many creative theories. (Hear, hear.) With regard to this boiling of animals, it occurs to me that this is not the first time that experiments have been made of this kind, and in pursuance of something like former Darwinian views. A very famous member of the greatest scientific society in England, or indeed in the world—I mean Sir Joseph Banks, of the Royal Society—had many years ago a notion somewhat similar to Mr. Darwin's, that certain little animals would grow into bigger ones, and so develop into a different kind altogether. No doubt some of you will remember the lines:—

"Big fleas have little fleas upon their backs to bite 'em,
And little fleas have lesser fleas, and so *ad infinitum*:
While great fleas themselves in turn have greater fleas to go on,
And they again have greater still, and greater still, and so on."

(Laughter.) Now Sir Joseph Banks thought there was a strong resemblance between a flea and a lobster (renewed laughter), and so he boiled his fleas, and he was in a terrible state of mind (I must not say what expletives he used), because they would not boil red! (Laughter.) From his experiment, we find that the boiling process is not a new one; but I do not suppose the flea survived the process, though I understand that it takes a great deal of heat to destroy that animal. (Laughter.) There is one other thing I should like to say. I think, so far as Professor Kirk has gone, he has completely demonstrated his case, that visible life certainly proceeds from something invisible, and that you have as much proof of the invisible will which precedes the visible motion as you

have of life itself. (Hear, hear.) You have exactly the same sort of thing in the inorganic world. If you take any solid, it begins in something immaterial, and which you cannot analyze. Take the form of crystallization in water—a yielding fluid, to which that hardness is imparted which gives us an idea of the solidity of material things. That hardness is caused by cold—a so-called “negation.” You have something (caloric) abstracted from the soft water, and you get a hard substance produced. You have in the solid material of this table, and in all the oaks of the forest, a solid matter built up merely of air acting upon a little seed. For what does it feed upon? Literally upon gases! This solid material is built up of carbonic acid gas and of various other gases: and the same may be said of all things, if you trace them up to their beginnings. Now it is a very important argument to show that life must needs commence in something invisible. I quite understand what Professor Kirk means by “mind,” though we had some difficulty in a previous paper of his in understanding the application of the term. Professor Kirk does not intend by “mind” to imply thought, but something that can will. There must be a kind of conscious action. No doubt we are much more used to applying the word “mind” in the way in which Mr. Brooke has used it; but I can quite understand the other application of it. It is an invisible, and not a material thing, that he speaks of; but I think it a real, and, if we could elaborate the argument, I would go further, and say a *more real* thing than matter. I think the mental and invisible are at the bottom of all that is visible. You may trace everything back to something invisible, and, without putting forward any Berkleyan views, which may be questioned, I think you will find that the substratum of everything visible is merely a law, and that every such thing could be resolved into immaterial substances.

MR. BROOKE.—I should like to say a word with regard to the fact which I mentioned before, as to the thermometer used in the deep-sea soundings registering an artificial temperature. The ordinary thermometers gave no reliable results in the deep-sea soundings at all, because the bulbs were so compressed that they drove the mercury up into the tube without any reference to the temperature. The only means of getting at the temperature was by using jacketed thermometers, in which the space between the outer bulb and the true bulb contained a quantity of spirit not quite filling it, to allow for the pressure it would be subjected to. When this thermometer was submerged, the only effect was to reduce the size of the outer bulb a little and displace the spirit, but without communicating any pressure to the interior bulb, which, therefore, then indicated the proper temperature. (Cheers.) With regard to motion not being necessarily an indication of individual life or existence, I may say that throughout the whole range of the animal kingdom the formation of an individual is due to the conjoined action or influence of two elements—what may be called the germ cell, and what may be called the sperm cell. These are developed in many cases in two different sexes, but in many cases they are found in the same individual. The concurrence of the two, however, is necessary for the reproduction of the kind, whatever it may be.

Now these sperm cells are generally supplied with one long appendage, by which they freely move about. Under the microscope they look very much like tadpoles with long tails, and they swim about as freely as tadpoles in water. But no one would attribute to them individual vitality as individual organisms. They are only the machinery subservient to the development of an organism, but they are not organisms themselves ; and therefore the fact of their motion does not imply automatic motion, nor is it necessarily an indication of individual life. (Cheers.)

Admiral FISHBOURNE.—Self-directed movement would perhaps meet the case, instead of self-movement : any self-movement which is the result of mind or will.

The CHAIRMAN.—I have to add but a very few words to what has been already said upon this paper. I repeat that we owe much to Professor Kirk for this valuable and important contribution to our proceedings. (Hear, hear.) Its importance consists in this, that he has laid his finger on one of the points, if not the most important one, in regard to which our opponents are obliged to confess that they do not know. When we turn to the material world, we find by the microscope and by the telescope, and by the experiments we make, a number of appearances which our opponents declare to be, and some of which no doubt are, real facts ; but when we come to the mysterious, unintelligible principle of life, they, equally with us, are obliged to confess that they do not know whence it arises. They tell us of molecules, and protozoa, and organisms, and primal organisms, and so on ; and they have now added protoplasm as the first origin of all things ; but they are unable to tell us anything of the origin of life, and must confess to the existence of a world beyond their ken and ours. (Cheers.) I have now only to call upon Professor Kirk to reply upon the discussion.

Professor KIRK.—I scarcely think it is necessary for me to make any observations in reply, because your criticisms have been so very gentle that there is almost nothing upon which I can found any remark of a substantial character. As to what is meant by life, I do not think it is necessary for us to gather our thoughts round a word, or the use of a word. What I understand when I use the term life in the sense in which we employ it in such a discussion as this, is self-movement, not confining it to the self-movement of an individual organism in the usual sense, but to the self-movement of whatever moves of itself. I am not able to say whether molecules move of themselves or not. I speak according to the description of Professor Bennett, who speaks of them as moving and coming together of themselves ; and I take what he says in the way of using it as an argument against his own ideas. (Hear, hear.) But so far as I am able, with careful and close thinking, to form a conception which I can satisfactorily express by the word " life " in the general, self-movement seems to me to be necessary to that—

Rev. C. A. Row.—May I ask whether you mean self-movement or the power of self-movement ?

Professor KIRK.—I mean the power of self-movement.

Mr. Row.—I thought so.

Professor KIRK.—The power of self-movement when you think of it potentially, and self-movement when you think of it actually. I merely say this to show that it is in a great measure about the meaning of a word on which we shall be occupied if we enter into a discussion on that point. The same with regard to the word “mind.” I hesitate to use, or to ask others to use, the word “mind” as expressive of that entity in which the faculty of self-movement exists, just because we are so accustomed to use the word “mind” in another sense. I should hesitate to use the word “spirit” in that way, because we are accustomed to it in a more limited sense. Yet we know that in the Scriptures the word “spirit” is used to describe that which is generally described by us by the mere negative term “immaterial,” which says nothing, but merely expresses a negative condition.

Mr. Row.—Would not the word “soul” suit you?

Professor Kirk.—That is in the same position, as being used for the immortal spirit of man which God implanted. But in my paper I felt the necessity of leaving every one to use his own word, which should mean something quite different from matter, only which should be as real as matter, at least in having the faculty of self-movement. There are some of the points to which Mr. Brooke alluded on which perhaps I might have made one or two remarks, but still they seemed to me to have grouped themselves under this head, that they convinced me that if I had had the paper to write over again, and plenty of time to write it and to re-write it, I should be able perhaps to bring it into a form in which it would be less accessible to the hostile criticism of those who oppose my view. Mr. Reddie has said that for the first time I have to-night been able to give you a short paper. I am afraid I made a virtue of necessity in writing a short paper, and, indeed, too hurried a paper; but I am very glad that, so far as my efforts have gone, you are agreed as to the validity of the great conclusion. (Cheers.) It is a conclusion which leads us to have before our minds the real world of spirit, as truly as we have before our minds the real—I may even say with Mr. Reddie, the less real, world of matter. (Cheers.)

The meeting was then adjourned.

ORDINARY MEETING, 7TH MARCH, 1870.

THE REV. DR. ROBINSON THORNTON, VICE-PRESIDENT, AND
AFTERWARDS JAMES REDDIE, ESQ., THE SECRETARY, IN THE
CHAIR.

I was announced that—

Rev. S. J. WHITMEE, Samoa, South Pacific, had been elected a member,
and the

Rev. H. H. DUGMORE, Queen's Town, Cape of Good Hope, a second-class
associate.

The following paper was then read by Dr. M'Cann, who said he wished to
apologise for the roughness with which he found he had penned his thoughts.

A DEMONSTRATION OF THE EXISTENCE OF GOD.
By the Rev. J. M'CANN, D.D., F.R.S.L., M.V.I.

MANY seem to think that the existence of God is a plausible but unproved theory, about which intelligent and educated men may agree to differ. That of two thinkers equally trained, logical, and earnest, one might affirm this mode of explaining the phenomena of the universe, and the other, with equal honesty, deny it. That His existence is a problem unsolved and unsolvable, concerning which we must be content to remain in the region of faith, and abandon all hope of entering that of knowledge. The purpose of the following paper is to prove the fallacy of all such assumptions by showing that we are no more at liberty to deny His being than we are to deny any demonstration of Euclid. He would be thought unworthy of refutation who should assert that any two angles of a triangle are together greater than two right angles. We would content ourselves by saying, "The man is mad,"—mathematically at least,—and pass on. If it can be shown that we affirm the existence of Deity for the very same reasons as we affirm the truth of any geometric proposition; if it can be

shown that the former is as capable of demonstration as the latter,—then it necessarily follows that if we are justified in calling the man a fool who denies the latter, we are also justified in calling him a fool who says there is no God, and in refusing to answer him according to his folly.

2. Before proceeding further it may be as well to notice an objection urged by Dr. M'Cosh, who says, "When ingenious men make the inference demonstrative, it holds out incitements to other ingenious men to detect weaknesses and breaks in the links of the chain." This is doubtless true, but it applies to all forms of argument, and the only way to foil these ingenious opponents is to make the chain so carefully that there shall not be any links either broken or weak. He again writes, "We see how man is responsible for his belief in God. Were the argument altogether apodictic there would be no possibility of doubt, and therefore no room for the consent or dissent of the will. But the argument being moral, and not demonstrative, there is room for the exercise of an evil heart in rejecting it, and therefore of a candid spirit in falling in cheerfully with it." The fact, however, that the argument is capable of demonstration does not cancel man's responsibility regarding it. The evil heart cannot indeed refuse the inference if it has followed honestly the chain of reasoning; in this case, indeed, the will would be powerless; but the will may be very powerful in withdrawing the attention from the argument altogether, or in so manipulating the evidence and deciding which shall be heard and which ignored, that fallacies may creep in and vitiate the whole. Were Euclid a theological or moral text-book, there would doubtless be found many denying its axioms and ridiculing its conclusions, asserting that the general credence it obtained was the result of a false and pernicious education. The clearer the evidence for God's existence, the greater is the guilt of those who deny it; and that it is clear to demonstration must now be shown.

3. By Deity, or God, is meant a Conscious Person, eternal and unproduced, capable of causing all changes that have happened, knowing all that is knowable, perfect in every attribute of His nature, and voluntarily conditioned by His own act in creating. The terms "infinite" and "absolute" are avoided, because they are more celebrated for confusing than for aiding thought. By demonstration is meant induction based on intuition. Mathematical demonstration begins by assuming certain principles, such as "Things which are equal to the same thing are equal to one another;" "if equals be added to equals, the wholes are equal;" "two straight lines cannot enclose a space," &c. These, and all such propositions,

are called axioms, because they are self-evident, and must be assented to the moment they are placed before the attention. No person on earth could persuade a sane man that two straight lines may enclose a space. The axiom in this, its generalized form, is assumed, because it is a necessary judgment, an affirmation we are compelled to make by our mental nature, and which is independent of observation and experience, and so cannot be proved by them. Observation may tell us that no two straight lines we ever saw can enclose a space, but what they may do in other worlds and under different schemes of government cannot thus be told us. Observation and experience cannot generalize that which has never been observed or experienced. Mathematical and indeed all reasoning proceeds on principles which cannot be proved by reasoning, but must be assumed as true. Back of all lies the great universal axiom that whatever consciousness says is true. Beyond all controversy, whatever consciousness affirms must be assumed as true, otherwise reasoning is a waste of time. Every man, for example, is conscious of his own existence; he would not attempt to deny it, and as little would he think of proving it. If he is at liberty to deny any one of all its utterances, he is at liberty to deny this; if, however, he may not reject this, neither may he reject any other.

4. We have, therefore, certain elementary principles of thought, which, being first principles, are incapable of analysis; are intuitive, not being derived from observation; and are consequently universally self-evident. Any proposition which is self-evident is axiomatic; it is not necessary that it should be intuitive. The axioms of geometry would not be less axioms could it be proved that they are derivative, nor would the reasoning founded on them be less demonstrative. The difference would be that its truth would be contingent on the truth of the axioms. We maintain, however, not only that we demonstrate our proposition because we base it on axioms; but, further, that it is necessarily true because the axioms are intuitive. The first step, therefore, in any demonstration aiming at truth is to obtain a starting-point which is known truth, that the mind, beginning with truth, may end with truth. It would manifestly be impossible to obtain certain conclusions from uncertain premises, as it would be to erect a firm building upon an unstable foundation. If it be, however, known that the first proposition is necessarily true, and that every succeeding proposition derived from it is also true, then we are assured that the conclusion must be likewise true. This is the course of a complete demonstration. Having obtained the axiomatic foundation, the succeeding process is to reason from it, according to the laws of thought; or,

in other words, to string axiom to axiom till we pass from truth which is both self-evident and necessary, to truth which is necessary, but not self-evident.

5. For example, that any two sides of a triangle are together greater than the third side, is a necessary truth, but not a self-evident one; but it is reached by such self-evident truths as these, "that the whole is greater than its part," "that if equals be added to equals, the wholes are equals," &c. In the same manner the necessary truth that Deity exists is reached by a series of self-evident truths, or axioms. If this process be called demonstration when applied to the relations of space, it must equally be called demonstration when applied to any other series of relations, and must carry with it as much certainty in the one case as in the other.

6. The first axiom that need be stated in this demonstration is, that *every change in an unconscious object must be involuntary and unknown*. It is self-evident that to will is impossible without being conscious of willing; therefore where there is no consciousness there can be no willing. It is also unknown by the object; for where consciousness is absent there cannot be knowledge. But changes do take place; they are not known to, nor willed by, the object in which they occur. But no sane man would argue that they happen spontaneously, without purpose or reason; if so, that purpose or reason, not belonging to the object, must be distinct from it. Our next axiom therefore is, that *every change is caused*. The self-evidence in this case is said to be imaginary and not real. The irresistible conviction presses itself on all men's minds. This axiom is universally allowed to be such, and therefore any conclusions based on it are not in any way vitiated by differences regarding its origin, but its intuitional character is stoutly denied, and so the truth of the conclusions is at stake. Those who take this ground say that it is an observation of the uniformity of nature, or rather that it is the uniformity itself. Mr. Mill's words are, "The uniformity in the succession of events, otherwise called the law of causation." This seems a very distinct confounding of things that differ. If succession be causation, then it follows that observing the first you observe the second; but so far from this being the case, I believe that succession of itself would not even suggest causation, or even if it were suggested, it most assuredly would not give that feeling of certainty which everywhere accompanies the affirmation of a cause. The moment the two words are uttered, we are conscious of a fundamental difference between them, which no reasoning can shake.

7. Causation and succession are felt to be radically distinct. We might easily imagine the present regularity of sequence to

be suspended, with the continuance of universal causation; but we cannot even think the suspension of the latter in a single instance. Mr. Mill writes, "The uniformity in the succession of events, otherwise called the law of causation, must be received, not as a law of the universe, but of that portion of it only which is within the range of our means of sure observation, with a reasonable degree of extension to adjacent cases." This is right so far as it relates to uniformity, but is wrong in calling that the law of causation; because we are compelled to affirm this law for the whole universe, it being impossible to construe in thought the happening of events anywhere, without those events being produced somehow, however irregularly the happenings may occur.

8. Observation also requires to be continued for a series of years, but the youngest child, or least observant character, instinctively believes in some cause producing any change they may notice. If they do not discover the cause, they still believe in its existence. Mr. Mill is again right when he states, "There must have been a time when the universal prevalence of that law throughout nature could not have been affirmed in the same confident and unqualified manner as at present." But was there ever a time when the belief that every event was caused somehow, or by some person, would not have been affirmed as confidently as it is now? In this search for a cause the most unlettered savage, and the most cultivated philosopher, are agreed; for "the scientific mind," writes Dr. Tyndall, "can find no repose in the mere registration of sequences in nature. The further question intrudes itself with resistless might, Whence comes this sequence? What is it that binds the consequent with its antecedent in nature? The truly scientific intellect never can attain rest until it reaches the *forces* by which the observed succession was produced." The attempt therefore to explain away the self-evidence and necessity of the proposition, that every change is caused, must be accounted a failure, and we are, consequently, freely warranted in asserting that it is axiomatic and intuitive.

9. Our next axiom is, that *the cause of all changes must be a conscious agent*. A man looking at a machine making a piece of cloth with a beautiful pattern woven in it, would unhesitatingly assert that it had been designed and made by some one for the purpose of weaving, and that the cloth was placed there for the purpose of being woven. No reasoning could convince him that the whole was a fortuitous concourse of atoms, perfectly accidental in its position, arrangements, and results; that the water just happened to be in the cavity that just happened to be of the required boiler form; that the fire just

happened to be in the furnace ; that the water just happened to boil after the fire had somehow become lighted ; and so on. He would regard, and rightly, the assertion as a mere truism, to doubt which would indicate insanity ; that the cause of all the changes he saw there must be one or more minds conscious of what they were doing. I hold it just as impossible for an honest observer to come to any other conclusion when observing the machinery of nature, combining in all its parts to produce the beautiful fabrics of the organic world, with their matchless hues and endless varieties of form.

10. Did the changes in nature all run, as it were, parallel to each other, not crossing nor concentring, perhaps the proposition might not be so self-evident as it is. But instead of that they are all focused or centred to a few points, so that changes at first appearing the most diverse and disconnected, gradually converge and mingle to produce some one result, which could not have been produced without such union ; this result, in its turn, commingling with some other result similarly produced, and originating a still higher unity. Changes are taking place in the leaves of far-off trees, as they purify the air ; in the bodies of animals and plants around, as they cook the soil into possible human food ; are taking place in the distant sun, by which other changes are produced in the space immediately surrounding him. These changes approach each other as I breathe the air and eat the animal, till they blend in the structure of the eye, which opens and drinks in the light ; so that these three great lines of change all converge to that glorious point of vision.

11. If the inspection of a machine necessitates or renders self-evident the affirmation of a conscious agent, the inspection of nature, for exactly the same reasons, renders the same affirmation necessary in regard to it. This axiom is often obscured by confounding cause with condition. When the question is asked, "What was the cause of that ?" the answer is frequently given in terms of the conditions. Suppose I blow up a rock by gunpowder, if I be asked the cause of the explosion, and reply that it was the contact of a little red-hot wire with the powder, I shall be incorrect : that was only the condition under which the explosion occurred ; the cause, in its strict meaning, was my desire to blow up the rock. I, the agent, was the real cause ; all else were only conditions in accordance with which I acted. Cause replies to the query, *why* ? Condition replies to the query, *how* ? If this distinction were kept steadily in view, it would free the discussion on causation from much of the fog by which it has been enveloped, and manifest the impossibility of doubting that the *cause* of all changes must be a conscious agent.

12. Our next axiom is that *the Agent must be able to produce all the changes which happen*. It is evident that we must not only have a cause, but a sufficient cause—one equal to the work which He is said to accomplish. On this point nothing more requires to be said, but we may at once affirm His omnipotence. *But the Agent must also know all the changes that take place*, for if He produce them He must know them. It may be said that He can work by general law; determining, for example, that matter shall gravitate without being cognizant of every motion of every atom. But if it be remembered that law is only a rule of action for Himself, and therefore wholly subjective, it will be seen that the gravitation of every atom must be willed, and so known. God's omniscience is therefore as necessary a truth as is His omnipotence.

13. The last axiom we shall state on this portion of the subject is that, *the Cause of all change must be Himself unchanged*. In other words, He must be eternal, or uncreated; for if He ever began to be, He underwent an absolute change. He could not be the author of his own existence, and consequently could not be the Universal or First Cause. It is self-evident that the First Cause must be uncaused; the Author of all change be unchanged; the uncreated be eternal. We hold it therefore to be capable of the most rigid demonstration, that there is an Originator and Governor of the universe and its phenomena, who is a Conscious Person, omnipotent, omniscient, and unproduced; and this Being we call God.

14. The mind having attained this point rests in perfect satisfaction; its instincts are responded to, its yearnings gratified, and it is content to remain for a time in ignorance of much, knowing much; but while it is recording sequences only, it is conscious of a painful void and an irresistible impulse still to ask, But who arranged them all? That system, therefore, falsely called Positive, yielding, as it professes to do, only negations; and still more falsely called Philosophy, ridiculing, as it does, the love of knowledge, is unscientific, because it arrests investigation at a point beyond which it might rarely proceed; it is unhuman because it ignores the basic principles of all human thought. It may, however, be said that the very existence of such a system is its own justification, because if the propositions laid down were really axioms, the positivist could not deny them. We reply that the positivist does not deny them, he ignores them and refuses to consider them at all. "Positivism," writes Mr. Lewes, "by no means denies the existence of such causes, it simply denies that by invoking them we can gain any insight into the laws of phenomena;" and therefore he declares "the search after first and final causes to

be a profitless pursuit." Leaving the positive philosopher to his ignorant negations, we shall resume our profitable pursuit. Having demonstrated the existence of the First Cause with His consequent attributes, by another demonstration we shall prove Him to be Moral Governor also; perfectly holy, just, and loving.

15. We affirm then, in the first place, that *right exists in the belief of men as distinct from wrong*. There have been great varieties of beliefs in different ages and in different countries as to what is right and what is wrong, but that something is right, and something wrong, has been universally held in all time. The reason at once unhesitatingly assents to the statement that it cannot by any possibility be right to do wrong, or wrong to do right.

16. But further, *the performance of what we believe to be right is, when possible, a duty*. Right is absolute in its requirements. An act is believed to be either right or wrong; if right, then there can be no debate about our duty in the matter; if wrong, there can be as little. This is so clearly self-evident, that it may be passed without further comment. Is it, however, intuitive also? If the conception of duty as distinct from prudence or policy can be originated by society, and its obligations enforced, apart from fear of suffering, then its derivative character may be maintained; but if not, we must say that it is an intuition. We hold, therefore, that *duty cannot be originated or imposed by society*.

17. As Professor Bain, of Aberdeen, strongly opposes this, it may be permissible to quote a few passages from his work on "Mental and Moral Science," for the purpose of testing the worth of his antagonism. "Human pursuit, as a whole," he writes, "is divided, for important practical reasons, into two great departments. The first embraces the highest and most comprehensive regard to self, and is designated PRUDENCE, self-love, the search after happiness." "The second department of pursuit comprises the regard to others, and is named DUTY. It is warred against not only by the forces inimical to prudence, but also occasionally by prudence itself." (Page 393.) On page 394 he defines duty to be "the line chalked out by public authority or law, and indicated by penalty or punishment." He acknowledges that "self-love will do little or nothing for improving the condition of society; to the pure self-seeker posterity weighs as nothing." But herein lies a difficulty. We are told that duty, or regard to others, is often warred against by regard to self; also, that duty is impotent before self-love; duty, consequently, must necessarily be put to one side. Duty may, therefore, be left undone and the man still be right, for manifestly it cannot be wrong to have the highest regard to self. But while men

are thus taught that self-love is a more powerful motive than duty, and that duty may be done or left undone at the dictates of self-love, society is conscious of a certain danger to itself, and chalks out a line, saying, "This *must* be done, or you must bear the punishment of transgression." But punishment is disagreeable, as a rule; consequently men abstain from the punishable acts: this abstinence, we are told, produces aversion, and "such aversion is conscience in its most general type."

18. Here is a whole string of fallacies. Laws are passed with the sole object of benefiting society; they are consequently solely prudential: they are obeyed because they will yield good to the individual, or through fear of punishment; the obedience is also solely prudential: and *duty*, therefore, finds no place either in the framing of the law or in the observance of it. The next fallacy is that abstinence from a punishable act, through fear of punishment, generates aversion of the act. That a man, for example, who wishes to steal a certain article, but dare not, is thus caused to hate theft. We had fancied the facts were exactly the reverse. The last fallacy is that such aversion, even could it be thus produced, is conscience. Have we never heard of men unscrupulous in conduct, and who were above the power of civil punishment, yet being tormented by the stings of an accusing conscience? Whence arose the aversion in such a case, when the acts were not avoided? There being no parent, whence came the child? Are we to be told that our "foremost" motives, the reasons why we do not forge, and steal, and murder, are the terrors inspired by the prison or the scaffold? Who would not repel the charge that he was truthful because it would be imprudent to be untruthful; honest, because it would be unsafe to be dishonest; that he would be a rogue if he gained by it, and if he dared?

19. It is true that the Professor speaks of sympathy as an influence in favour of duty, but even here there is a confusion, for society did not originate sympathy; therefore, according to his theory, it can be no part of duty to sympathise with any one; and, moreover, sympathy and duty are very different motives. If we feed one who is hungry because we have a pleasure in alleviating pain, it is wholly distinct from the motive of doing it because it is right. Sympathy, therefore, may be more correctly classed among the aids to happiness than to duty. It is utterly useless attempting to prove that society can either originate duty or enforce it. No man has any right whatever to say to me, speaking from his own level, that I *ought* to do any single act for the good of any one, myself in-

cluded. If I choose to be miserable it is my own business alone. If I choose to amuse myself by trying to make others miserable, they have a right to prevent me if possible; but they have no right to find fault with me for pursuing happiness in my own way. They may express their feelings of dislike at my experiments as strongly as they choose, which I may laugh at as heartily as I choose, but they may not utter one word of blame. Society can coin and utter such words as "policy," "prudence," "selfishness," "expediency," &c., but it cannot, as society alone, have any concern with such words as "ought," "duty," "obligation," "praise or blame," "virtue or vice," &c.* Morality is beyond its province and its power, but morality exists with its elements of conscience, right, and obligation; and as morality cannot be the product of human law, experience, or observation, it must be an integral part of man's nature, and so be the product of the Author of his nature, or God. Deity is, consequently, a moral creator.

20. *But man is conscious of a certain amount of free agency in the origination of his actions.* Necessitarians may reason as they will, but the moment they begin to act their reasonings are cast to the winds. They would shrink from asserting that a thief in his theft is as praiseworthy as an honest man in his honesty, which they would be compelled to do, if they believed that the one had no power to be honest, nor the other to be dishonest. The fact of free agency, up to the point so lucidly and ably indicated by the Rev. Dr. Irons, in his admirable paper on "Human Responsibility," is one of the surest utterances of consciousness, next to that of our own existence, and cannot be shaken by any reasoning however plausible, for the reasoning that would attempt to shake it must begin by annihilating itself. It is clear, therefore, that if a man be free to choose either right or wrong, in order to his own good and that of others, he must be guided as to which he ought to elect, and have reasons placed before him why he ought to prefer the right to the wrong.

21. Therefore our next axiom is, that *moral consciousness, with moral freedom, requires moral government.* It will suffice here to quote the words of Dr. Irons from the paper just named: "There is no alternative, we repeat, but this: disclaim all honour and all shame; *resist all the facts* of human nature's accountable existence here; or acknowledge a Supreme Power, which knows the whole responsible community, and governs it." It is perfectly clear that a *Moral Governor must*

* See this subject of Utilitarianism ably treated, from another point of view, by Jas. Reddie, Esq., in the *Journal of Transactions*, Victoria Institute, ii. 129.

be perfect. Anything short of this destroys the very basis of obedience. It is self-evident that He must be perfect in knowledge, or He could not know the inner life of all His creatures, nor fathom their motives, which are the true moral tests of action. He must be perfect in justice, or we need not owe Him absolute moral obedience. Perfectly good, or we would not owe Him love, the most powerful agency in His government. Perfectly wise, or we would not owe Him confidence, without which we might distrust His legislative enactments. Perfectly powerful, or we would not owe Him trust, and believe Him able to perform His promises; or we might disregard His threats, imagining that He had not the power to execute them. The smallest possibility of error on the part of God would cast the whole moral creation loose from its obligation, and would substitute fear for duty. God claims obedience from His own infinite perfections; an obedience which man owes, not because he will be punished, not because he will be rewarded, but because God is the all in all of the moral universe, and that it is right that the finite mortal should give perfect obedience to the infinite Holy Creator.

22. We cannot, therefore, escape from this conclusion : either there is no moral law whatever, or there is a God perfectly just and holy. But there is a moral law, therefore there is a perfectly just and holy God. We maintain consequently that by the foregoing series of propositions, which are universally acknowledged to be as axiomatic as are those of geometry, we have demonstrated the existence of Deity; and having proved these axioms to be intuitive, we have shown our demonstration to be fundamental truth. Therefore, the existence of Deity is not only a necessary form of thought, but it is also a necessary fact.

23. In conclusion, we believe it to be very important to be able to prove that if the mathematician be justified in asserting that the three angles of a triangle are equal to two right angles, the Christian is equally justified in asserting, not only that he is compelled to believe in God, but that he *knows* Him. And that he who denies the existence of Deity is as unworthy of serious refutation as is he who denies a mathematical demonstration.

The CHAIRMAN.—I suppose I may return to Dr. M'Cann the thanks of the meeting for his paper. I must say that, in my opinion, it is rather short, perhaps too brief; but Mr. Reddie has kindly agreed to supplement it with some arguments in another paper of his own, made in a different strain, but tending to the same point,—namely, a demonstration of the existence of God; and we shall take the discussion on the two papers together.

MR. REDDIE.—I beg leave to explain that the paper I am about to read was not written for such an audience as this. It was delivered in 1852 in the Mechanics' Institute, Southampton Buildings, and it was written on account of a discussion which had taken place there between a Swedenborgian and an atheist, at which I was present, and where I thought the Swedenborgian made but a poor defence indeed of his thesis. When this paper was originally read, I challenged public discussion on the subject, and it was then discussed. I may say that I differ from Dr. M'Cann's concluding words, that "he who denies the existence of Deity is as unworthy of serious refutation as he who denies a mathematical demonstration;" for, to begin with, I have not met many gentlemen who understand a mathematical demonstration who deny the existence of Deity. But if we are to deal with this subject at all, we must deal with those who really do deny the existence of Deity; and the object of my paper was to meet the case of such a person, a Mr. Nicholls, who really appeared to be perfectly sincere. I hope the meeting will remember that, in delivering this paper, I was addressing working men, and speaking with reference to a discussion that had already taken place. I did not cover so large a field as Dr. M'Cann, but where I did travel, I think I went over the ground a little more minutely than he has done. I have not had time now to compress or re-write my paper, so as to make it more suitable for the present audience; I hope you will therefore excuse its simplicity, and consider the class for whom it was intended, the class, perhaps, however, who most require to be addressed upon such a subject.

Mr. Reddie then read his paper as follows:—

ATHEISM CONFUTED BY A NEW ARGUMENT; OR WHY MAN MUST BELIEVE IN GOD. (Being a Lecture ON NATURAL THEISM, originally delivered in the London Mechanics' Institution, Southampton Buildings, Holborn, on Thursday, 3rd June, 1852, with reference to a Discussion which took place between a Swedenborgian and an Atheist on 11th May, 1852.)—By JAMES REDDIE, Esq., HON. SEC., V.I.

[I. **I**N the discussion which took place on the 11th of last month in this hall, on the Being of a God, Mr. N—— (the Atheist), contented himself with merely objecting to the arguments brought forward by Mr. W—— (the Swedenborgian), who affirmed the existence of a Deity; and, indeed, when challenged to *disprove* God's existence, after at first saying merely that he did *not undertake* to do so, he fell back upon a technical rule in evidence, which he employed as if it were a universal principle, and quite stretched beyond its legitimate

measure, saying, that "he *could not prove a negative*," as if to do so were impossible, and, that, therefore, he could not prove, and should not be expected to prove, the non-existence of God; but that the whole burden of proof lay upon those who maintain that God *does* exist. A little consideration, I think, will place this in a truer light. Without going into the abstract question as to the possibility or impossibility of proving what the logicians call a universal negative, I will content myself with observing, that the maxim or rule, that a man should not be called upon to prove a negative, is in many cases very properly applied: as, for instance, if a man is accused of a crime, the accuser ought to prove the case against him, and the accused should be in no way bound to prove the negative. It would be unjust were he required to do so, for the law presumes all men to be innocent till they are proved guilty. But even in such a case it is by no means true that a man cannot prove a negative. For suppose the accusation were that some one had attempted to shoot Mr. W—— on the evening when the discussion referred to took place, and that the accused was not really present at the meeting in question, but spent that day and night in Paris, and in the company of friends, you know it would be perfectly competent and easy for him to disprove the accusation—or prove the negative of the proposition in question. But, even in this case, though it *might* be possible and easy for a man to prove a negative, it would by no means be fair or politic that he should be called upon to do so, as a matter of course. It is true the accusation might be utterly false, and he might only have resembled the real criminal; he might have passed the evening far from the scene of action, but perhaps alone, and he possibly might not be able to adduce evidence to prove his absence—*i.e.* to prove *an alibi*, as you are aware it is technically called. But it is altogether different in argument, where a proposition is affirmed on one side and denied on the other, whether respecting some abstract truth or theory, or some matter of fact, and concerning both the parties equally. If you affirm that there are one hundred persons in this room, and I deny it, it would be just as easy for me to prove the negative of your proposition as for you to prove the affirmative. And, in fact, in almost all propositions the positive and negative may be made to change sides without changing the nature of the proofs either party must adduce: as, I might say there are fewer than one hundred in the room, and you negative that assertion, and say there are not fewer than a hundred. So it is of most questions also, and especially it is so as regards the great and all-important question to be considered this evening. I affirm that there is a God, and if any

one ventures to deny it, he ought to be able to give his reasons for this negative or denial as readily as I on the other side. Nay, more so, for this reason. It was admitted in the discussion referred to that there is a universal, or all but universal, belief among mankind that God does exist; it is also the common belief among those around us, and therefore it would seem incumbent upon any man who ventures to contravene this notion—probably at one time entertained by himself—and to contradict the opinion of the whole world, to be ready with some reason for his singularity, some ground for his change of opinion, some argument or proof in justification of such opinions. And I would beg to observe, in passing, as to this universal consent of mankind, that those nations, or peoples, or rather tribes—for they are quite insignificant in number—of whom men have been led to doubt whether there really was any notion of a Deity, entertained among them, are the most degraded, savage and ignorant of our common species—ignorant not only of this idea, and of everything like high moral perceptions, but ignorant of even the commonest arts and conveniences of life. In fact, I think it has only been said (and that, remember, doubtfully) of some few of the most savage of the African and other negro tribes; to whose very imperfect language also it may be owing that such vague notions, as it is most probable after all they do entertain of a God, have not been quite comprehended by their civilized visitors. But if any one, notwithstanding, considers it hard that he should be required “to prove a negative,” as he may still call it, we shall soon see that it is no mere negative he is required to prove, but really an affirmative proposition, or series of affirmative propositions; and considering that he asserts these in the face of all mankind, and tries to upset the faith of the world, surely the burden of proof must seem to lie with tenfold weight upon him.]

2. To deny the Being of a God, is to assert that material or sensible things are eternal, and that this world, which bears evident marks of change, and which is changing continually before our eyes, has, notwithstanding, always been in existence and always will exist. And it is to assert this in the face of, I will not say revelation, but of all the theories of geology and astronomy which, after the latest discoveries of science, have been propounded to the world. To deny the Being of a God is further to assert, that while we see that man can do nothing for any useful purpose without the employment of his intelligence, skill and reason, in devising and guiding his operations,—the senseless matter of this earth, and the unintelligent instinct of the inferior animals can accomplish, without reason and without knowledge, the marvellous works which nature displays, in-

finitely more perfect as they are, than the most perfect works of reasonable man! And it is to declare that we ourselves and this beauteous creation around us,—the earth, the sea, and all that they contain, the heavenly arch above, with its glorious sun, the bright soft moon, and the thousand thousand stars that glitter in the sky, are all the works of chance—nay, *not works* at all, but so arranged in beauty as they are, and so admirably adapted for our use and service, by *chance*, by *accident*, by *nothing*! It is to affirm, consequently, that order, regularity, wonderful adaptation for endless uses, fitness, beauty, light, life, and whatever else we see and admire and endeavour to imitate in nature, proceed from nothing as a cause, from *no* wisdom, *no* love, *no* intelligence, *no* life, *no* science, *no* knowledge—from absolutely a *blank*, from *nothing*! Before a man ventures upon such positive statements as these, is it not incumbent upon him to have some grounds for such strange doctrine; some reasons for such singular and unnatural conclusions? Were one to stand up in this room and say—I don't know its architect; it was built before I was born; it may, perhaps, have always existed; I don't believe it had an architect at all; Would not such a series of propositions astound us? But what is the difference, save in degree—and in infinite degree, no doubt—between a man who would say this, and one who would look on the architecture of the heavens above and the foundations of the earth on which he stands, and doubt that they also had an Architect? If he who believes in God wished to evade the argument, verily he might, with some show of reason, throw all the burden of proof upon the doubter! Reasonably, he might say, show me anything on earth suited for the use of man, of the origin of which I have absolute knowledge, and the operations of which I fully understand, produced by chance or accident, and I may then believe that the other things around me, which have their origin in what we call nature, and whose operations are only beyond my understanding from their very superiority and perfection, are also effects of chance or of some unintelligent necessity! But if I should be counted mad to doubt that this chair, or table, or house, was the work of an intelligent being, much more must I judge myself unreasonable, to doubt that the heavens and the earth, myself, mankind, the inferior animals—all more wonderful than the greatest triumphs of human art and man's intelligent skill—are the works of an infinitely wise and omnipotent, intelligent Being! Surely the analogy of all I do know is in favour of ascribing to an Intelligent First Cause the various effects I see around me, and the burden of proof ought to lie on him who ventures to say that the world could exist of itself, and all its admirable arrangements come of *Nothing*!

3. But, I have made these preliminary remarks, with no view of taking advantage of the admitted fact, that I have the all but universal consent of mankind agreeing with my own convictions on this subject. I do not shrink from giving the reasons for my belief, any more than I would wish to shrink from giving my reasons, had I any, for *not* believing. When I have an opportunity, for instance, I am always glad to tell a Roman Catholic why I *don't* believe in Papal Infallibility; *i. e.*, to prove the negative of the proposition that the Pope *is* infallible, just as readily as I always am to tell an infidel why I *do* believe the Christianity of the Bible; and to-night I am ready to give my reasons for believing that the world is the creation of an Intelligent First Cause, *i. e.* God; or, to prove the negative of the proposition that we ourselves, and what we see around us, are all the work or production of chance or unintelligent necessity, *i. e.*, of no directing mind or supreme intelligence.

4. In the discussion to which I have already referred, and the unsatisfactory result of which induced me to come forward to deliver this lecture, Mr. N——, on being asked what proof would satisfy him that God does exist, placed his hand upon the tumbler on the table before him and said, “A proof like what I have for the existence of this glass, which I can see and touch.” The reply he received to this was painfully inadequate; and I shall now, therefore, give my answer to this demand. Could you, I would ask, convince a blind man that colour is as real a thing as sound? or a deaf man that sound is as real and sensible as the things he sees and handles? Could you convince any man that he does not feel pain because he cannot see it? Or, do you believe that a dead man is alive, because you see the material body as it lies organized before you, only wanting the invisible part, the life, which cannot be seen? How, then, can it be reasonable,—and this is a question of reason,—to ask the same proof for the existence of two things, which, in their nature, are utterly different? And this leads me, to what ought to be the real beginning of the question, namely, to the definition of what we mean by God; for, it is only if I define God to be something material or sensible, that I can reasonably be asked for such a proof of His existence as would be required of me in order to prove the existence of a *material* or sensible object. But I think it pretty well known that in England the Deity is *not* believed to be a stock or stone which can be touched or handled. And, while I wish to show you how unreasonable it is—how almost like trifling with the question—to ask for the *same* proofs of God's existence, as you have for the existence of what you can see and touch; and while I am bound also to say, in justice to Mr. N——, that he afterwards added, that “much less proof” would satisfy him; I hope to be

able to give you, not less, but much stronger proofs that God exists. I will appeal, if not directly to your eyes and senses, that you may see and touch the Eternal Cause of all things, yet, desiring you to make good use of these, to your better and nobler part, to your intelligence, reasoning powers and understanding; and (to revert to the tumbler) I will give you reasons for believing that God exists, and is your and my Creator, as strong, at the very least, as you have for believing that this glass was made and fashioned by an intelligent man, which I take for granted you do believe, even though you may never have seen glass-blowing in operation, and know not either who made this, or where or when it was made. *That* is the kind of proof Mr. N—— ought to have demanded; that is the kind of proof he now shall have. I take for granted then, though I might fail to be able to prove what particular man made this tumbler, or what particular manufactory it came from, nay, though it might really be absolutely impossible for any man but the actual maker to do so, still that there is rational proof, or probable evidence, to satisfy all of us that this glass really was made by some intelligent artificer, not by itself, and still less by nothing, by chance, or by silica and potash, wind and fire, getting somehow accidentally together and producing it. And if so, if you admit this, as I am sure you must, I maintain that the works of nature around us, though they do not furnish a particular revelation of God—such as that which the Christian and even the Jew glories in possessing,—still do furnish rational proof that the world is the work of God, *i. e.*, of an invisible and intelligent Power, Who is the great First Cause, the eternal origin of all things.

5. This, then, is our definition of God: an invisible, intelligent Being, the First Cause or origin of all things; and, this definition being given, I am sure no sensible man will ask for the same proof for the existence of such an invisible Being, as for the existence of a piece of senseless matter which itself has no perceptions, and can only be seen and felt. We believe in the existence of our own invisible, intelligent spirit. We do so because we are mentally conscious of it, not because we can see it with our eyes or exhibit it to the senses of others to be seen and touched. Do other men believe us to be intelligent beings? Only in one way *can* we exhibit this invisible intelligence palpably to them—namely, by showing *its effects*; yet this evidence satisfies our fellow-men that we possess it, and that it is a real existence, though not sensible; and we, in like manner, believe that other men are also rational beings endued with intelligence; not because we can see or handle their invisible minds and spirits, but merely because we see the effects

of their intelligence, and judge, therefore, of them as they of us. Well, *and why not so of God?* Are you a carpenter? Then, in making a door or box, you know that you require to cut the wood so as to fit the parts one to another, and the whole for the object you have in view; and to do so, you require to be furnished with certain instruments or tools, also devised and formed by intelligence, for measuring, and planing, and cutting, and fixing the materials you work upon. And, conversely, when you see a suitable instrument, or find a box or door so properly fashioned and fitted as to answer its purpose, you conclude it was made by an intelligent workman; and if you see him in the act of working, you conclude he has intelligence and skill, according to what he exhibits of these in his handiwork, *i.e.*, according to their *effects*. And, by your experience in your own particular craft, and the exercise of your reflection and intelligence, you are able to carry your judgment beyond yourself and your own kind of work, and to judge that skill and intelligence are also necessary in making all other works of art and skill, as the clothes you wear, and still more—from its greater complexity of construction and superior functions—the watch you carry in your pocket. And, according to the complexity of the work and the beauty of the workmanship observed in any article of common use or piece of mechanism, you can judge to a great extent, though the craft be not your own, of the amount of skill and intelligence required to produce what you see. Nor have you any difficulty (which is a point of consequence) in discriminating between what is the result of chance or accident in what you see, and what has been devised, intended, and arranged by skill and intelligence. For instance, when you see the broken flints lying upon a newly-macadamized road, you can judge at once how much is intended in what is before you, and how much has been left to chance. You know at a glance that the stones have been laid down so as to cover a certain space on the carriage-way, and only there, *intentionally* by *intelligence*; but as to the disposition of each particular piece of stone, you see at once that that has not been cared for; that they have been left by chance, as it were, to fall into places for themselves. But when you look, on the other hand, to the causeway, or the pavement, you observe, also at a glance, that there, not only are the stones laid down so as to occupy a certain length and breadth, and so to cover a certain space; but you see, from their regularity and proper adjustment one to another, that each particular stone has been so laid down in its own proper place, *not* by chance or accident, but *intentionally*, with a purpose, and under the superintendence of an *intelligent, thinking mind*. Then, to compare the stones jumbled together

on the carriage-way, in no order and without regularity, or even the causeway, or pavement, with a fine piece of mosaic work, in which the pieces of stone, all of different colours, are so ingeniously placed and arranged as to form a picture which looks as if painted by an artist with the finest brushes and colouring; who that has any sense—what rational being—I ask, can doubt for a single moment, that purpose, intention, and design, with the greatest intelligence and mental exertion, as well as the greatest manual dexterity and skill, were requisite, in order to produce such a finished and beautiful work of art? The jumbling of material atoms together, by some unthinking, unintelligent energy in nature, which some philosophists have dreamed of, could at best but have produced some such result as we find when stones are cast carelessly down on the highway; but what could arrange such atoms (granting for a moment their existence) into the mosaic beauty of the landscape which nature exhibits to our eyes and minds, save Omnipotence, combined with infinite skill and intelligence? Few, or only a few, I suppose, of those here present but had an opportunity of seeing the Great Exhibition of man's skill and intelligence last year in Hyde Park;* and few, I should think, but concluded that the greatest skill and intelligence were required in the architect and builders of the enormous building which contained that wonderful display of man's intelligence and labour. The more intelligent and better educated, too, among you were, unquestionably, at a glance at that building, or even upon hearing *what was* built or proposed to be built, aware that science or a knowledge of principles—the highest kind of intelligence save intuitive reason—would be absolutely requisite in the framers of such a complicated structure, in order to insure the perfect adaptation of part to part and of each to the whole, and to secure the necessary strength in the mighty fabric. You would also at once perceive that one mind, or a communion of minds, must have schemed out and planned the whole, and superintended its fabrication. You would laugh at the man who would say, that the hundreds of workmen there employed, were not guided and controlled at every step, according to a unity of design, a distinct specification, a general idea or plan; and you know, that this idea, or plan of the whole, must have existed anterior to the making of the several parts, and have been constantly kept in view in their final arrangement and fixing together. In short, you *know*, that *intelligence* must necessarily have preceded and presided over that great work, as indeed over *all works* of which you know anything; and you know

* The first Great International Exhibition of 1851.

that, without such intelligence, the building could neither have been planned nor put together by men, however physically strong; nay, even though the several parts had been somehow brought into being, fashioned by chance, and laid down ready made to their hands! Just so, exactly, is it respecting this greater exhibition, and that more marvellous display which nature unfolds on every side, of infinite intelligence and skill in the building of this round world and the brilliant crystal canopy of its glorious firmament. "The heavens declare the glory of God, and the earth showeth His handiwork." "Their sound has gone forth into all lands"—preceding all other revelations,—“and their words”—true rational discourses—“unto the ends of the world.” “That which may be known of God,” is thus manifest in all creation, “even His eternal power and godhead,” His invisible power and intelligence is thus clearly seen around us, “being understood by the things that are made”; ay, and not only His intelligence and power, but His goodness also, “in that He sends us rain in due season and fruitful seasons, filling our hearts with food and gladness,” and, as a rule, exhibits before us the creation filled with happiness and enjoyment, and still bearing its original stamp of “very good,” notwithstanding its subsequent defacements. But here I would beg to observe, that though I have, and purposely, just made use of some Scriptural phrases, I am here not building any argument from revelation. That there are strong arguments to be derived from this source, serving especially to clear up moral enigmas, and make plain the ways of God to man, I know well; but to prove the BEING of a God, we require no argument from Scripture which does not exist independent of Scripture; and these passages which I have adopted to express some of my ideas, I have quoted, because (independent of their innate beauty) they themselves declare that the evidence deducible from the works of creation sufficiently establishes *this* doctrine. And, I must say, I felt distressed above measure to hear it asserted by one who had undertaken to discuss this question, that “man could know nothing of God without revelation!” Why, my friends, you can’t entertain the *notion even* of a revelation in your minds, without believing that there is a God. “A revelation!” A revelation from whom, and of what? A revelation *from* God and *of* God, to be sure; not a revelation coming from a nonentity, a blank, a nothing!—What success, then, can a man hope for, who, in his mission to spread the knowledge of God, presents himself to the atheist, saying, You don’t believe there is a God, and I can furnish you with no reason for believing in one; but, now, only listen to His revealed will, as set forth in this volume! The

answer is obvious,—if your book be a revelation of the will of a Deity, begin by telling me what you mean by God, and why I should believe in the existence of such a Being; for, if there be no reason for believing in His existence, there can be no reason for believing in His will, or any revelation from Him. “Before a man can come to God he must believe that He is;” before there can be a revelation of God, there must needs be a God; and before I can reasonably be expected to listen to a revelation purporting to come from God, I must have some reason for believing that He exists.

6. I have no intention, in this lecture, of enforcing, further than I have done, what is called “the argument from design,” in favour of the Being of a God, *i.e.*, the argument that there must have been an intelligent designer of things visible, deduced from the marks of design we can trace in the works of nature around us. The argument is an interesting one, and has been admirably treated by Paley and his commentators; but, to some extent, it involves a *petitio principii*, a begging of the question, or what is almost tantamount to it. Inasmuch as, if we find men who see, and acknowledge that they see, evident marks of *design* in nature, they must of course admit, by the very terms of such acknowledgment, by the very meaning of the words employed, that there must have been a *designer*, the author of the *design* they admit that they perceive. But I think there is a simpler and stronger proof for the Being of a God, which has also this advantage, that it can be adduced to those who do not see, or do not admit, that there are these evident marks of design in the things we see around us. It begins a step further back, and leads to the discovery of intentional act, even if it stops short of that of ultimate design, which the other requires to prove; and it has the advantage of using the simplest facts of nature, which lie under the observation of the least reflecting, and looks at these in their commonest aspects, instead of selecting the more difficult and complicated phenomena as the basis and foundation of our reasoning. I think the very order, regularity, fitness, perfection, life, motion, and, I might add, the very existence of material things, go to prove an eternal intelligent author, superior to the things themselves, even if we fail to observe their ultimate purpose, design, or “final cause.” We find neither *order* nor *regularity* produced by what we call chance, as far as we can make experiments with the things in our power; as has already been illustrated in a matter so very simple as the way in which stones are laid or cast down upon the highways. Still less do we find any *fitness* in haphazard endeavours to accomplish anything; nor can we do anything to any purpose with

our ordinary tools and instruments *except bungle*, unless we take pains in our works, and use our intelligence to guide our operations. Nor do we ever arrive at *perfection* in our own works, or any approach to it, without the greatest labour and most skilful as well as intelligent painstaking. Neither can we conceive that *life*, which appears and disappears in material substances, can come from the dead substances themselves (and still less from *nothing*!) without some original living power, which must have bestowed it, and which enables it to perform the marvellous functions it fulfils. Then as to *motion*, we know but two kinds of it in material things: motion proceeding from life or internal energy, and motion produced by external force or mechanically. Let us discard the former altogether, as already glanced at in our allusion to life, and consider that alone which is produced by power applied from without, or external force. When we see an object suddenly pass through the air, we at once, as rational beings having some experience of natural things, conclude either that it is a bird or other animal, moving spontaneously by some locomotive power or life within it; or that it is some machine, constructed by mechanical skill to move artificially in the air, by some kind of mechanism or implanted energy; or, lastly, that it is something, having no capability of locomotion in itself, natural or artificial, projected by some living agent or external force, as a stone thrown from a sling, or a ball fired from a cannon; and, in either case, an invisible will and an intelligence are necessary to have produced such an effect. When I hold a ball in my hand, you know its natural tendency is simply to fall down to the earth; it has no power of any other motion, being inanimate, dead matter, incapable of thought or will. Well, then, if you see it moving through the sky, what—as a rational being—*must* you conclude? You cannot for a moment think it has moved in that way of itself. Do so; and who would believe you sane? Well, then, let us raise our thoughts. Instead of a little ball, which we ourselves can project in the air, let us turn to the moon, and regard its motion round this earth, and say, What *must* we conclude regarding it? That, as the poets have it, it literally *walks* through the clouds of heaven? But where, then, do we find its feet, or trace any symptoms of its functions of locomotion? Or what footing can we imagine it has on which to tread in the expanse of the firmament? I leave it boldly in the hands of all men; there is but *one* rational answer: the moon moves in her stated course by some invisible power or law, and in accordance with some will, which she herself possesses not. If we reflect, we cannot but conclude, that, as the motions of our own bodies are produced solely by the life and,

power and will within us, so the universe we behold surrounding us, in which we observe inanimate things, equally with the animated creation, in a continual state of motion, must be animated, as a whole, by some marvellous life and power and will; and this is what we mean by God. For, when we rise a step further, as we are compelled to do if we allow our reasoning powers free scope, and consider, not the mere fact of life and motion only, but also the *order* and *regularity*, the *fitness* and *beauty* and *perfection* of the things we see and of their motions, we cannot but conclude that this animating will, which moves and orders all, must be supremely wise and *intelligent*. We cannot imitate such order, regularity, or perfection ourselves, in any degree, without the exercise, not only of will and intention, but also of skill and intelligence. We know, *if we know anything*, that it could not have resulted from chance—from *no* presiding intelligence! We feel that it must be the work of something besides, which we see not; of something analogous to our own will and intelligence. We feel that life pervades the universe; that nature “lives and moves and has its being” in some invisible, intelligent power;—and that is God!

7. Nay, I descend a step further, and maintain, that even the *existence* of the commonest material thing is an argument for the existence of the Deity. Let a man take in his hand, not a watch, as is supposed by Paley in the famous introduction to his work on Natural Theology, but the commonest piece of matter, a mere rough stone,—What may he not deduce from its wise contemplation! Is it a living thing, like himself? No; it seems passive in his hands, appears to have no will; it remains where it is placed, betrays no sign of feeling when pressed, exhibits no organization to lead him to conclude it is aught save simply inert matter. Is that all? Leave it free, now, in the air without support. It falls! Why? We concluded it had no will; by what influence, then, does it move in falling? Upon lifting it again, we recollect that, after all, it does seem to have *one* will of its own; it presses downwards to the earth, and we feel what we call its weight upon our hand. Is it, then, are we now to conclude, a living thing? We throw it up in the air; it obeys the power we exert upon it; it rises, but its motion gradually decreases; it is poised for a single instant, and then again it begins to fall, and falls to the earth, where it remains inert, as before. Dead matter, again, we exclaim! It has no will of its own, it is incapable of any choice; and it is, it only can be, under some invisible influence, not its own. Then, when we proceed to compare it with other material bodies, and find them all, in various different degrees, however, influenced in like manner; and see that it is to this we

owe the stability of the earth, and the regular appropriation in their several places of earth, water and air on this globe; here again we are forced to rise to the appreciation of the manifest truth, that this unseen, all pervading influence is applied upon principle, in regular order, under law, and not by chance; that the will of God, as our own, in fine, is determined by *intelligence*.

8. And now, that the subject has led me to refer to one of the most simple material objects, I will make a few observations respecting the existence of what is called, abstractedly, *matter*. Mr. W—— correctly stated that the existence of matter itself had been denied by some, and instanced Bishop Berkeley as one who notoriously did so. This, however, was questioned by Mr. N——, who said he did not believe that Berkeley meant to deny the existence of matter at all. But these contradictory opinions might have been prevented by *a definition*; for we shall see that it is quite possible that both parties may have been right, according to their own sense of what they were talking about. If by *matter* was meant all sensible objects we can see and feel around us, certainly Berkeley never denied that these things do exist, sensibly as they appear to do, and precisely as we see and feel them. But if by *matter* is meant some general material foundation or substratum in the objects, besides what we see and feel,—any substance (that which *stands under* these sensible forms), such as the Aristotelians believed in,—and that this substance is an eternal matter, or *materia prima*, common to all material things, while the sensible things we do see and perceive, are but the forms or accidents which, as it were, cover and clothe this supposed substratum of matter, this Berkeley did deny; and, when we clear the ground a little, and explain what we mean thoroughly, I doubt whether any one in this room will venture to profess he believes that there is any such matter or substance in existence.* Indeed, I think it would be useless to argue with a man who denied the existence of what was visible and tangible before him; but, though I must not diverge into an examination of the great argument as to our mental perceptions, pro-

* That I am right in this representation of Bishop Berkeley's views, will best be seen by the following paragraph from Part I., § 35 of his *Principles of Human Knowledge*. He writes :—"I do not argue against the existence of any one thing that we can apprehend, either by sense or reflection. That the things I see with mine eyes and touch with my hands do exist, really exist, I make not the least question. The only thing whose existence we deny is that which philosophers call *matter*, or corporeal substance. And in doing this [he not unwittily adds] there is no damage done to the rest of mankind, who, I dare say, will never miss it."—(Wright's ed., vol. i. p. 99.)

pounded by Bishop Berkeley in support of his theory of what we call material existence, I would wish, with your permission, to have a short hunt after this *hidden* "matter" of the universe. How shall we first of all describe this abstract and, as some will have it, eternal matter? Shall we call it hard or soft, hot or cold, visible or colourless? If *hard*, then is it in the soft air we breathe? And can we, with propriety, say that the substance or substratum of air is *hard*, while the air itself is soft, fluid, and yielding? If, again, we say this abstract matter—common to all sensible things—is *soft*, can we conclude that it forms the substratum of the diamond, or of the solid rocks and mountains? If so, what gives them their solidity and hardness, if essential matter itself does not, and if abstract matter or substance be something *soft*? Or, again, is it *hot*? Then, is this abstract matter, which is *hot*, the substratum of ice and snow? And are we to conclude that, though we know that heat dissolves some things and resolves others, formerly hard, into attenuated air, or gas, that nevertheless *something hot* is the substance or matter of this solid world? Or, shall we say, it is not hot, but *cold*? If so, as we cannot say that cold exists in fire, are we to exclude fire from material things, and say that in fire there is none of this common matter? But then, when we remember, that although cold does change thin vapour into the denser fluid water, and renders fluid water hard and solid, yet it only rarefies the air and adds not to its solidity; and moreover, while we were driven to admit that heat—which tends to dissipate fluid and liquefy hard bodies, and make even solid things evaporate into gas and air—could not very well be considered the abstract matter or substance of material things, we are now equally puzzled with cold; for we find, by adding cold to substances, their bulk is frequently decreased, so that the more you add of this essential matter—if cold be so—the less the material object becomes; but not even that invariably, for water, when frozen into ice, instead of becoming contracted, like metals under the same influence of cold, anomalously expands! So that, if cold be abstract matter, by adding it to water, the water increases in bulk and lightness, but added to metals, they grow smaller, and, in proportion to their bulk, heavier; which would seem to prove, if we admit weight as any criterion, that cold neither gives nor takes any material particles from bodies, and therefore cannot in any sense be regarded as essential matter! Besides, I may just observe, what doubtless many of you know, that the chemists of our day teach,* that cold is a mere negation—the absence of heat,

* Or *have taught*, till very recently.

or caloric—just as darkness is a negation, being the absence of light. Well then, if you adopt this theory of cold, notwithstanding the impenetrable solidity it imparts to water and other substances, you cannot for a moment entertain the notion that cold—a mere “negation,” a nothing!—has any claim to be regarded as the substantial matter of the universe! Or shall we say that matter is *colour*, or, if I may so speak, the *visibility* of things? If so, do we conclude there is more matter in the dewdrop when it sparkles gem-like in the sun, than when it lies scarce visible under the shade? But if colour be abstract matter, then in darkness it disappears! and the glorious light, we must conclude, though it seems the most immaterial and ethereal of material things, to be the most material and substantial of all! Besides, if we regard colour as anything peculiarly material, we contradict the almost universally received opinion that it is only a secondary quality,—an idea of the mind that perceives it, rather than anything in what we see! While, if we say that matter must be colourless,—what is this but to say, that it is *invisible*!—a fact, by the way, I think, we must admit, in another sense we really knew, before we began this search to discover it!

9. We shall then have to conclude, that this well-known and, as some would have it, universally-admitted existence, this essential and abstract matter, this substantial substratum of all things visible, is neither hard nor soft, nor hot nor cold, and that it is absolutely colourless or invisible; and yet, that it pervades all things, and is a real existence! It has been said, that “solidity and extension are necessary predicates of matter”; but where now is the former—the *solidity*? and, as to the latter, is not extension a predicate more especially of “free space”; and what, pray, is free space, but—*nothing*? What abstract matter, then, do you believe there is in existence, besides the visible, sensible forms or things which we see and touch themselves? Remember, we are not denying the existence of material things, which we see and feel, but of some unseen material substratum, said to be common to them all. We are not denying the existence of material substances, in the mere ordinary sense of the word substance; but of any one eternal matter, or common substance, of which all visible things are made. We are not denying that this table is made of wood, these walls of brick and mortar, or these lights of a union of gas and caloric; but we are denying that the wood, brick and mortar, gas and fire,—and I may add to the list of incongruities wholesome food and poison,—are all made of the same common substance: we are denying our belief in a matter which is colourless, and therefore cannot be seen; not solid and therefore cannot be felt; and neither hot nor cold! but which, while mis-

called matter, is, when described and searched after, found to elude our every sense, and really to be, if an entity at all, a *spirit* and *immaterial*.

10. But perhaps the consideration of such subjects may not be familiar to some of you, and you will naturally fall back upon some previous vague idea, as to matter in the abstract, associated as it is, in all our minds, with the idea of something *solid* and producing *solidity*, as contra-distinguished from what is ethereal or spiritual. Let us, then, make one other endeavour to get at this substantial matter, and see if we can trace any necessary connection between material particles and solidity. We shall soon see, I think, the groundlessness of this common idea. In fact, I shall be obliged to maintain, with Mr. N——, that unfortunately nothing is more common than for men to have ideas about fancied somethings, which in truth are real nothings! We require the very simplest apparatus—anything solid will do, if only not too strong and solid for us to operate upon. Let us take a strip of glass cut from the edge of a common window-pane. You know that while we try to bend or break it, it offers a strong opposition to our efforts, and if we endeavour to put our finger through it, it opposes a solid resistance; or if we bend it slightly, it soon recovers its straightness when we cease. Now, is this elasticity, resistance, or solidity, owing to anything material in the piece of glass? Is it the abstract matter displaying a will of its own? Suppose then we break it. In doing so, is a single material particle abstracted from it? Would it weigh less now than when whole? And, if we continue to break it up into small and smaller pieces, would they, when laid in the scales, weigh less than the single piece of glass did when whole? I mean, will any one assert that material particles are abstracted by dividing the glass into pieces or even into powder? No one will say that. Well then, where has its solidity gone? If we join the broken pieces as they were, they won't adhere—the elasticity, the solidity are wanting! To what, then, before it was broken, did it owe this force of resistance and elasticity? To something in it *material* or *not material*? *Not material*, we must admit. For when we grind the glass into sand, we still have all the material particles—none lost—but where is then the impenetrable hardness and solidity which once pervaded them, and made them one whole?—This has brought us to a conclusion which many of you may be aware has been arrived at in other ways, and is laid down generally by philosophers,—namely, that hardness or solidity, though one of the “*primary qualities*” of bodies, in contradistinction to colour and other “*secondary qualities*,” as they are called, is yet *only a quality*, and nothing

itself essentially material or substantial. Here, then, is another natural paradox. Hardness or solidity, which we naturally consider the most material and substantial characteristic of material things, is, when we reflect and examine, nothing really material at all! Glass, when formed and joined in a certain way by means of fire, and then allowed to cool—for the cold is as necessary as the heat, you know, to produce the solidity—has certain qualities of hardness, solidity and elasticity; but these qualities it has as a whole, only from *some law* which regulates the cohesion of its particles—"the attraction of cohesion" it is scientifically, or rather technically, called—(but if by attraction we mean "drawing together," and by cohesion "sticking together," and translate the phrase, it will stand, "the drawing together of that which is sticking together!" and, you will agree with me, this technical phrase adds little to our ideas on the subject,) while the same material particles, none wanting recollect, when broken up and separated, lose all these solid and substantial qualities, by merely separating one part from another, by taking nothing material away! The hardness, then, you observe, the solidity, the elasticity, all that opposes obstacles to the penetration or action of other material things when brought into contact with it, is produced only by *some law* which gives the particles of glass these properties when united or fused together in a certain manner. This *law*—the expression of the *word* or *will* of God—is the *true* substance!

11. But I will illustrate this point by a work of man's skill, not so subtle as this wonderful effect of God's law which we call nature. You will please to keep in mind that all solidity, or resistance to penetration, is merely the preventing of any other material getting between the particles of matter, which, *when penetrated*, as we call it, are only pushed aside, as a knife divides particles of bread or wood, and as your finger may particles of sand or clay. We can have nothing simpler than a cane-bottomed chair. Observe the texture formed of the cane; it serves as a substantial support to the person who sits upon it with all his weight; it offers resistance to the penetration of your hand when you press upon it; and you are aware that this strength or power of resistance is owing merely to the way in which the strips of cane are woven together and made to support one another, and which prevents them moving aside at every touch, as they would do if not thus artfully crossed and woven. We have another illustration in the texture of the clothes we wear. In them we have strong materials, difficult to tear, and which would resist to a great extent all the strength by which we might endeavour to push our finger or hand

through the texture when stretched out; and these strong fabrics are made of the softest materials—of cotton, or wool, or the gossamer tissue of the silkworm,—which when untwisted and unwoven offer no resistance to pressure or penetration, and are liable to be blown hither and thither and scattered by every breath of air. But if any of you have difficulty at first in seeing the strict analogy in this illustration, in which the tissue of cloth and a plate of glass are compared, a *mechanical* with a *chemical* operation, it may be made more plain by considering the common process of freezing, with which all are familiar. When the cold commences to weave its glassy covering on the surface of the water, I dare say you have all observed the threads of ice which are shot across the water in every direction, at first like some fancy-patterned cloth-work, till the process is continued so long that they press close upon one another and cross and mingle together and fill up every interstice, when at last the whole assumes the appearance of a solid mass. To return; nothing is added to the wool, or cotton, or silk, (*i.e.*, the manufacturer need not and *ought not* to substitute paste or gum for skilful art and workmanship,) only the same material particles or substance being artfully joined and weaved together; and see the effect! So it is also with the ice, and so with the glass, only the process there is the finished work of nature. Fire is, as it were, the carding-machine employed to mingle the raw material, the blowpipe is the loom, cold the weaver's hand, and a sheet of thin, transparent, but hard and elastic glass the admirable texture!

12. So here again—and almost without intention—we find ourselves naturally brought to look away from material or sensible things, to something beyond, not material, but not the less real, active and intelligent: “from nature up to nature's God!” Yes! in diving beneath the surface to trace this *materia prima* of Aristotle, this fancied eternal matter or substance, we find that Protean-like it disappears as we advance: it has no shape, nor colour, nor solidity, nor heat, nor cold; it can't be seen, nor felt, nor heard,—and therefore, not very well conceived at all. And we have found that *solidity*, that which is bound up with the very notion of all that is substantial and enduring in material things, is really a mere *immaterial quality*, sometimes produced by cold, and that said to be a mere “negation;” and we know that the solid hardness of the ice-rock disappears before the genial warmth of the sun, and that by greater heat we can evaporate even stones and iron!—Verily the poet only philosophizes, and anticipates the deductions of scientific reasoning, when he says the substratum of all visible things is nothing—*i.e.* nothing material, substantial, and unchanging!

The wand of Prospero seems only but to foreshadow the eventual fiat of the Great Magician of nature, by whose admirable skill and intelligence this fair creation has been brought into visible existence. And we can well anticipate the time when *our* last act shall come; when the curtain must fall; when "our revels here shall be ended," and when we shall truly find behind the scenes, that the real "actors were *all spirits*"; when

"The cloud-capp'd towers, the gorgeous palaces,
The solemn temples, the great globe itself,
Yea, all which it inherit, shall dissolve;
And, like some unsubstantial pageant faded,
Leave not a rack behind: We are such stuff
As dreams are made of, and our little life
Is rounded with a sleep."

13. But, to conclude: for our subject requires us, if but for a moment, to return to our argument once more. Amidst the continual changes in material things which we see around us, do we really find no other kind of thing, also in existence, more stable in its character, more real and apparently enduring?—Let us regard the Microcosm, or little world of man,—ourselves. Our hair grows and is cut off, the material particles of our bodies waste and are evaporated, and fresh materials are taken in by us as food, and partly assimilated by our bodies, again to be thrown off and evaporated, and partly cast away as incongruous and incapable of assimilation; and, to such an extent does this process of continual change take place, that physiologists have calculated, that in seven years' time the whole matter or visible portion of our bodies is utterly different from what it once was! But does our identity undergo any change the while?—Are we not the same men because the matter, (not the invisible non-entity so called, which we have already disposed of, but the *matter* we see and feel around us,) the flesh that clothes our inner-self or spirit, is not the same? Do we,—the true man, the thinking soul, for it is what thinks that really is ("cogito, ergo sum"),—Do we, I ask, lose anything really pertaining to ourselves, to the rational soul or understanding mind, when our fleshly covering is thus changing and leaving us for ever? Or does our unchanging mind gain power or any increase from matter; does it feed, upon the material elements which supply our bodily wants, in the processes of eating and digestion? Or, will any man deny the existence of this invisible part, which thinks, and reasons, and remembers, and wills, and retains its identity; and maintain but the existence of the continually changing, decaying, corporeal frame, in which the spirit temporarily resides? It is true our spirits are invisible. I

cannot see yours and you cannot see mine; but have we any doubt of their actual existence and reality? It is true, I can hear your voice, and you mine; but is *that* anything real and substantial?—In a moment it is, and is not!—It is true I see your bodies, and you mine; but in seven years hence, we are assured, none of us could see the same bodies in one another; and are we, because they are *now* visible, to think these bodies which, even like the momentary sounds of the voice, will also thus pass away, are more real than the living souls that inhabit them. No; we cannot doubt our soul's existence! *We are conscious, therefore, doubtless, we exist.* We reason, and reflect, and will in accordance with our rational cogitations; our bodies obey our souls; and thus our intelligence and will produce certain outward effects—as intelligible discourse with our mouths, and skilful works by means of our hands; we see the same operations performed by other living beings *like* ourselves, and we rationally conclude that they are intelligent, living beings, as we are. We see the inferior animals, endued with life, also like ourselves, but, unlike us, incapable of speech or rational discourse, and unable to perform anything analogous to man's performances; while, on the other hand, we find, that, by a certain natural energy which we call instinct, they can—manifestly without intelligence of their own, and without teaching—do some few things more perfectly than even man, with all his intelligence, could do; and I will only instance the little insect the bee, whose manufacture of wax and honey, and whose exhibition of the honeycomb in its hive of sweets, is *its* admirable palace of industry! I say, we see the operations of this instinct in the inferior creation, and cannot ascribe it to any science, or knowledge, or ratiocination in the inferior animals themselves; and to what—to whom—as ourselves rational beings—must we needs ascribe it? I think I need not answer the question! Then, we look farther, as we said at the commencement, to the motions of the inanimate creation, to the glorious architecture of the heavens, the majestic course of the moon and planets with their satellites round their respective centres, the wonderful beauties and perfections of the vegetable world, and the surpassingly wise provisions in all the chemistry of creation, for the watering of the thirsty earth, the purifying of the corrupted air, the reinvigorating of animal life, the healthful enjoyment of all nature:—

We see

“The clouds consign their treasures to the fields;
And softly shaking on the dimpled pool

Prelusive drops, let all their moisture flow,
In large effusion, o'er the freshened world."

* * * *

We see

. . . . "Heaven descend

In universal bounty, shedding herbs,
And fruits and flowers on Nature's ample lap!

* * * *

And, while the milky nutriment distils,
Behold the kindling country colour round.

Thus all day long the full distended clouds
Indulge their genial stores, and well-shower'd earth
Is deep enrich'd with vegetable life ;
Till in the western sky the downward sun
Looks out, effulgent, from amid the flush
Of broken clouds, gay shifting to his beam,"

* * * *

Then

. . . . "Night succeeds,

A softened shade, and saturated earth
Awaits the morning beams, to give to light,
Raised through ten thousand different plastic tubes,
The balmy treasures of the former day ! "

(Thomson's *Seasons*. Spring, p. 3.)

14. Need I ask, are these the works and arrangements and operations of dead matter, without intelligence ; of chance ; of nothing ? or of a Being, supremely good, wise, and intelligent ? Has this rapid, and—as I feel it to be—most imperfect review of a few, *very* few, of the wonderful facts continually before our eyes, and a slight analysis of these, served, or not, to lead us to one decided and unwavering conclusion as to the Great First Cause ? Is there an Atheist, is there even a sceptic, who will deny or can doubt that a *God exists* ? Nay, do you not rather feel, that even the language of ordinary poetry is inadequate to express your felt convictions on the subject ? Do you not feel that the language of *natural religion* is also the truest language of *natural philosophy* ; and that, after contemplating the wonderful works of nature, we speak most truly the convictions of our reasonable minds, when we directly apostrophize the Deity, and say, with the poet divine :—

"*Thou* visited the earth and blessed it ; *Thou* makest it very plenteous ; *Thou* waterest her furrows ; *Thou* sendest rain into the little valleys thereof ; *Thou* makest it soft with the drops of rain, and blessest the increase of it.

Thou crownest the year with *Thy* goodness, and *Thy* clouds drop fatness. The day is *Thine* ; the night also is *Thine*. *Thou* hast prepared the light and the sun. *Thou* hast set all the borders of the earth ; *Thou* hast made summer and winter. O LORD, how manifold are *Thy* works ; in wisdom hast *Thou* made them all ; the earth is full of *Thy* riches."

[15. A single word more :—The actual existence of moral and physical evil in the world is generally, I do believe, the great stumbling-block in the way of men's receiving the doctrine that all things are the creation and under the immediate superintendence of an Almighty and Intelligent Being. To those who may unfortunately be influenced by such considerations, I would beg leave merely to suggest, without—as that is impossible at this hour—arguing the question, how much all the difficulties arising from the existence of evil are increased by the miserable hypothesis that there is no God, and no life for us beyond the present ! Nay, the argument has been well urged by Butler, that, *because* such evils do exist, and *because* there is not always a satisfactory award upon the actions of men in this life, *therefore* we must conclude, even had we no other argument, that "the be-all and end-all" of our existence is not here. Even were we not constrained, by all that is rational within us, to conclude that "the Maker of all things is God ;" and that, but for His eternal existence, the universe, instead of a fair creation, full of life and beauty and marvellous operations, would have originally been, and so continued to be, a dark and lifeless *blank*, and at least (whatever we may conceive space filled only with eternal matter to be) a world without conscious beings, and consequently without *ourselves*, as well as without the Deity. Let us only grant, *but as an hypothesis*, the existence of Eternal Intelligence, and at once, the flood of light, which our reasonable souls seem to pant for, is let in upon this utter darkness of nature ! Were there no other argument than this, *The Idea of God explains all*,—seeing it accounts for our own subordination, as well as our superiority, in the world of being,—we should, I venture to assert, be compelled, as intelligent beings, to accept it. How much more so, when it is pressed upon us, as supplementary and cumulative proof, in addition to all the convictions we must have of God's existence, if we judge only in this, as we do in respect to the existence of the life and intelligence of each other, and in accordance with our invariable and everyday convictions and experience as to productions of human art and intelligence ? And remember one of two things you *must* believe ; for the Atheist has his creed as well as the Theist : you must believe in *eternal matter* if not in *eternal mind*. Mind and matter do both

at present exist; and the question is, *Which is the cause and which the effect?*—*which* of the two is eternal? If you say matter—the dead and unintelligent thing,—then you have to account for the *creation* of life and intelligence! But when you say that mind is eternal—Intelligent Being the true *entity*,—you have nothing contrary to your reason or experience to add, to complete your hypothesis of creation. Even *now* you have a striking analogy *before you*—the creation of something sensible, which you now perceive, produced by an invisible power, presided over by intelligence! You ask where? In every *sound* you now listen to—in every *word* I am uttering in your hearing! But where in the whole creation can you point out a single instance of life, intelligence, and will—in short, of spirit—being subordinate to and produced by material things? If matter only be eternal, account for the existence, if you can, of the invisible *life* and *mind* of man!

16. I am aware there are difficulties in Natural Theism, and even in Revealed Religion itself, which of course I could not overtake in this lecture. But these *cannot* overthrow the foundation I have earnestly, and I trust successfully, however inadequately, endeavoured now to lay. And all these difficulties will vanish, I am bold to say, to any one who will give himself further time to study the question; who, having arrived at faith in the—to him—Unknown God, proceeds onward to the study of what has been revealed of Him, and sincerely seeks the “knowledge of the Holy” in the Scriptures of Truth, and from those whose very mission it is to declare God’s will—His mercy and His perfect righteousness—to men.]

The CHAIRMAN.—We are much obliged to Mr. Reddie for supplementing the paper of Dr. M’Cann, and I shall be glad to hear any observations either from members or strangers, upon either or both of the papers that have just been read.

Mr. AUSTIN HOLYOAKE.—As I happen to be a non-member, and, may say, a stranger, I hope the meeting will pardon me for taking this early part in the discussion. I must confess to having been taken a little by surprise since I have been in the room, because, when I came, I thought I should only have to listen to one paper; but we have had two. The gentleman who read the latter appears to me to be somewhat in the character of an animated supplement. The debate to which he alludes, as having taken place in 1852 between Charles Frederick Nicholls and the Rev. Woodville Woodman, I happened to be present at, and fulfilled the functions of chairman. I cannot, at the present moment, call to mind the whole scope of that debate, or say how far Mr. Reddie’s paper would be relevant thereto; of this, however, I am quite sure, that one half of it is not relevant to the subject of

this evening's discussion. Neither do I think that I am called upon, under the circumstances—not having known that Mr. Reddie intended to supplement the lecture, of which I had kindly been favoured with a copy—to follow him in his argument, though a great deal of what he said was a reiteration of what had been advanced by the opener, excepting that he appeared to repudiate, to a certain extent, the design argument; and yet, if his argument had any merit at all, it was in favour of design; or, if not, I fail to see its relevancy. But I am more concerned with the paper of Dr. M'Cann. The Secretary did me the favour of sending me a copy beforehand, and I also followed Dr. M'Cann very attentively as he read his paper, and I noticed that, at the opening, he made a brief apology for want of time in preparing it. I am truly sorry that he had not time to give his best thoughts to a subject of such importance as this. (Hear, hear.) It is a matter upon which no gentleman should come forward to instruct an audience of this description—and especially directed, as I imagine the paper is, to persons in my position,—unfortunate position as some people seem to think,—unless he has well considered and prepared himself; I therefore regret that Dr. M'Cann has not given his best thoughts to it. As he read his paper, I had an impression that it was faulty, and I thought I saw several weak points in it—

Dr. M'CANN.—I simply apologized for the roughness of the form of my essay, and not for the scantiness of my thoughts. I said nothing at all to deprecate criticism. All the thoughts were matured; it was simply the manner in which they were expressed to which I referred.

Mr. HOLYOAKE.—I will accept that explanation. I wish, however, to enter a respectful protest against the wording of the last sentence in Dr. M'Cann's first paragraph, and against an expression which he uses in his conclusion. They are nearly in the same words, and are the same in spirit:—

“If it can be shown that we affirm the existence of Deity for the very same reasons as we affirm the truth of any geometric proposition; if it can be shown that the former is as capable of demonstration as the latter—then it necessarily follows that if we are justified in calling a man a fool who denies the latter, we are also justified in calling him a fool who says there is no God, and in refusing to answer him according to his folly.”

Again:—

“If the mathematician be justified in asserting that the three angles of a triangle are equal to two right angles, the Christian is equally justified in asserting not only that he is compelled to believe in God, but that he *knows* Him; and that he who denies the existence of Deity is as unworthy of serious refutation as he who denies a mathematical demonstration.”

[During the reading of these quotations the Rev. Dr. Thornton was obliged to vacate the chair, and Mr. Reddie presided for the remainder of the evening.]

Now, the spirit of the latter observation is very much in the spirit of a quotation which is often made, I do not care from what authority you take it, and which is equally bad in taste, and false as a matter of fact, viz., “The

fool hath said in his heart there is no God." In the first place I do not know, nor can I imagine, any fool as a likely person to study this question ; the chances are that no fool ever thought the question out. We know there are thousands who believe, but there are few who really study and think out this great question. I think the time has arrived—especially when we know the class of men of high intellect and culture who are arising in this country, and who think differently to most people—when we should say that that phrase, and even the thought which it embodies, is totally inapplicable to them. It is bad in taste, and ought to be laid on one side, because, if you came here to read this paper, and did not intend to reason with those who disbelieve, or could not accept your conclusion, why did you read it at all ? Certainly it could not be to convince those of your own opinion. There are many clever men in this country, quite as clever as the opener, who totally disbelieve in his conclusions. I take a similar position ; but allow me to say that I am an Atheist in this sense—and I do not know any modern thinkers upon this subject who take different ground to what I do—namely, I am an Atheist as to the various representations of the Deity of which I have read and heard ; this is very different from being a denier of a God. No man *knows* any more of the existence of Deity than he knows of the existence of a Devil ; it is a pure matter of imagination, according to a person's intelligence and education.

The CHAIRMAN.—Do you not deny altogether the existence of Deity ?

Mr. HOLYOAKE.—I do not deny the *possible* existence of a God. I do not know any Atheist who does ; we deny the various representations which are made of a Deity. I will give you one or two reasons why I cannot believe some of the representations which have been made to-night. In the third clause of Dr. M'Cann's paper, he says : " By Deity, or God, is meant a conscious person, eternal and unproduced, capable of causing all changes that have happened, knowing all that is knowable, perfect in every attribute of His nature, and voluntarily conditioned by His own act in creating." That is simple anthropomorphism, and nothing more. I would ask, if the alleged Deity be a person, how can he possibly be a Deity ? If a being is a person, how can he be other than persons such as we know ? " Person " implies organization, contrivance, and, if you will, intelligence. A Deity is simply, then, an organized person. Now, persons of whom we have any knowledge, or ever had any knowledge, are persons of finite capacities, limited in their knowledge and powers. We never knew a person apart from organization.

The CHAIRMAN.—I think I may make the acknowledgment that the paper is so far defective that it has not gone sufficiently into that definition ; but still it is obvious that Dr. M'Cann has no idea of a " person " in the sense you apply it.

Mr. HOLYOAKE.—I would rather that you left him to defend his own arguments.

The CHAIRMAN.—It was not with the view of interfering with the discussion that I spoke, but you are reasoning against a position which no one has maintained. I do not, for instance, believe in Deity as being an organ-

ized person, such as you seem to suggest. We have even a definition in the Thirty-nine Articles quite the reverse.

MR. HOLYOAKE.—Excuse me interrupting, but I have had much experience in presiding at meetings like these, and I have always found it well to allow a speaker to finish in his own way. I was saying that Dr. M'Cann considers this Being, this conscious Person, to be voluntarily conditioned. We will consider that hereafter. In the eleventh clause, he says: "If the inspection of a machine necessitates or renders self-evident the affirmation of a conscious agent, the inspection of nature, for exactly the same reasons, renders the same affirmation necessary in regard to it." I will admit, for argument's sake, that a machine necessarily implies a contriver; but then every machine of which we have any knowledge has been contrived by man, by an organized being, and even the greatest intellects we have known have been persons of limited capacity and liable to err. You ask me, because I admit that a machine implies that it has been made by man, to say that it is logical, and in perfect analogy, to conclude, from other things which I see around me, that a totally distinct Being or Organism exists. Logic fails you there. If it proves anything by this process of analogy, it proves the existence of a Man. The only novelty I have found in the paper is one which may place Dr. M'Cann in a difficulty with his spiritual pastors and superiors, if they take any notice of it; it is certainly heresy. He says, the Deity "could not be the author of His own existence: not the Universal, the First Cause." Mr. Reddie maintained that the Deity was the First Cause of everything. If, according to Dr. M'Cann, this Deity "could not be the author of His own existence, and, consequently, could not be the Universal or First Cause" (paragraph 13), he must be the second or lower cause, and, consequently, by parity of reasoning, He must be the effect of some preceding cause. I believe, myself, there is no Being, in the sense of this paper, that could possibly have been the First Cause, or even a conscious person, omnipresent and unproduced. It is self-evident that the First Cause must be uncaused. If any human being can imagine the first cause of everything, it will be a feat which I know no one able to perform. What do you mean by a First Cause in the sense claimed for the Deity, or for the cause of the universe? It is an unthinkable idea. You cannot imagine something existing before anything existed, or imagine a time when time was not. If this Being was not the first cause, Nature, or something we call Nature, must have been in existence, and this Being, for whom Dr. M'Cann has been contending, must be something within Nature, and therefore not God at all. I say, then, you cannot possibly imagine a Being outside governing all things. You cannot get outside of everywhere; everything within nature is a part of nature, and subject to the laws of nature. If you say that God is not an organized Being, and not a person in the sense that I understand, how do you make out that there can be intelligence without organization? We never knew intelligence without organization, and you have therefore no analogy to go by. That is exactly the position, and always must be the position, in considering final causes. Dr. M'Cann has quoted Mr. Lewes, who says that "the search after first and

final causes must be a profitless pursuit." It must be, because it is impossible for the human mind to imagine a beginning, or to define an unorganized Being. According to your argument, why may I not be justified in saying that Nature is eternal, that we know of nothing excepting Nature, and if Nature existed before the Being, what necessity was there for the Being? If you say that He is eternal and uncreated, why may not Nature be equally so? Your argument would show that it is impossible to imagine the non-existence of a Deity. I say that it is much easier to imagine the non-existence of some strange, extraordinary Being, of whom no one has any knowledge, than to imagine the non-existence of Nature; you cannot imagine the non-existence of everything. All these discussions must end where they begin—in assumption. No one has any knowledge of the subject; it is pure imagination, according to each one's intellect, mode of thought, and training. If you limited yourselves to stating your imaginations as imaginations, I should have no contention with you; but when you come forward to say, We can demonstrate such a Being, He has certain attributes, and He designed us for certain purposes, and we must therefore pursue a certain line of conduct (which you lay down), I must differ from you, for you have no more knowledge than I have, and you have no right to lay down rules for my guidance. I have gone over two or three points, and I trust to pay still more attention to the argument. I intend publishing thoughts upon this subject; they will be more coherent than the imperfect utterances of to-night, and I shall take an early opportunity of laying them before Dr. McCann.

The Rev. C. A. Row.—I came here this evening to do what was rather disagreeable,—to severely criticise, with the intention of demolishing, Dr. McCann's paper; and it did not require the aid of Mr. Holyoake for that purpose. I candidly confess, however, that I further intended to supplement that paper; but my friend Mr. Reddie has produced something which has rendered that unnecessary. First of all, let me say that Mr. Holyoake has made a slight mistake respecting paragraph 13; he has misunderstood or misapprehended it. I have certainly not read it as intending to assert that there is no such thing as a First Cause. It is a mere inference, following certain principles which the author disclaims. I do not say that the points in the paper have been put as clearly as they might be, and in some places I think there have been misprints. For instance, in page 2 the author says "by demonstration is meant induction;" and I think he means "deduction."

Dr. McCANN.—Yes.

Mr. Row.—So I thought. I am ready to admit that I do not think it possible to apply demonstration to the proof of a God in the sense in which demonstration is meant in mathematics. In dealing with mathematical subjects, we deal with two conceptions; in geometry with simple extension; and in algebra with simple quantity. Dealing with these conceptions only, we are able to deduce certain conclusions; but I do not apprehend that it is possible to exercise this strict process in any other department of human knowledge. The moment we introduce another factor into our conception, we are incapable of perceiving, for certain, as in mathematics, whether the same

terms are in the final conclusion as in the premises. We cannot, therefore, use the process we call demonstration, as in mathematics. Still I quite understand there are equal certainties, quite as certain as mathematical demonstrations. I will take an example. Suppose I had four pennies, and I threw them up, and when they all fell they showed "heads," I should think that very extraordinary, and if I did that twenty or a hundred times, and with the same result, it would be irresistible to my own mind that some unfair play had been used. That would be self-evident, though I candidly admit that it would not be demonstrative. It is also utterly impossible to give a definition in a mathematical sense of what *ought* is, yet we have as clear an idea of what it is as anything in mathematics. The argument is brought into narrow limits as to the attributes of God. I have engaged considerably in controversial works, and I do not use hard language; the *Westminster Review* has stated that I have abstained from any species of it; still I cannot altogether find fault, as Mr. Holyoake has done. A few weeks ago I went into one of the rooms at the British Museum, and I saw the skeleton of an enormously large serpent. I contemplated it; I looked at the backbone, the wonderful arrangement of sixty or seventy vertebræ, and I could not help feeling that I had before me one of the strongest evidences of design. I saw adaptation, and felt the inevitable result that must follow from such an evidence of adaptation. It never originated of itself; it proved design, it had combination, it showed a scheme, it showed wisdom; it is no use to invoke infinity of time and get rid of the question in that way. I am quite aware of what is common among writers of great name; when they meet with marks of design and skill, they say they were caused by evolution by the aid of infinity of time. That is no answer to what we instinctively perceive as adaptation; and where there is this adaptation, I am entitled to infer a designing mind. By adaptation I mean skill and everything of that kind. Unless we are clear upon these points, we have misunderstandings; and there is some such confusion in using the term "final cause." Some of Mr. Holyoake's remarks arose from an insufficient appreciation of several of Dr. McCann's definitions. The want of correct definitions renders us incapable of mutually understanding one another. When I use this word "design," or "adaptation," I include every kind or species of skill, and when I saw and contemplated this serpent, there was an irresistible effect wrought upon my reason, and I believe the text almost consciously passed through my mind, "The fool hath said in his heart there is no God." I am not quite sure that the words did not escape my lips.

The CHAIRMAN.—That passage has been already referred to, and I thought of saying a word about it, but I observed Mr. Holyoake was impatient. In the original, "fool" is not used as an expression of contempt, as in our ordinary usage;—it merely means the unwise.

Dr. McCANN.—I was going to refer to that.

Mr. ROW.—I was aware of that. Well, this serpent showed an immense, a wonderful adaptation of one part to another. I am not going to enter into metaphysics and show what are the laws by which we perceive adaptation, it is a simple fact that mankind perceive it. There is often a great deal of

difficulty imported into this subject by metaphysical analysis. I am prepared to abide by the principles of common sense, and what all people feel must have some reality despite all metaphysical quibbles. Looking upon that skeleton and remembering the vast number of means that are required as conducive to a common end—it afforded an overwhelming evidence of design and a designer; and that evidence runs through the universe of Almighty God. Mr. Holyoake has said that if we have any idea at all of the personality of that God, it involves anthropomorphism. I wish to know how man can form any idea which is not derived from his own bodily or mental perceptions. We can only conceive of a Deity relatively, even by the highest conceptions which man can possibly entertain. I cannot see the force of Mr. Holyoake's metaphysics as to God having no attributes. I am ready to admit that the human mind has only human ideas, and that it cannot comprehend the infinite. It can infer and grasp the finite in its highest and grandest forms, but there is something beyond which it cannot grasp, which we call the infinite. An argument upon this subject occurred to me last week, and I am going to mention it. I allude to the flint knives of the first stone age. I am not desirous of arguing whether they were the production of man or not, but think it will soon appear, from what I have heard, that they are positively the productions of nature. My argument is, that atheists infer, from the imperfection of the instrument, that these knives were made by men in a very low state of civilization. They certainly prove this if they are real knives. If these knives can be shown to have been in existence a hundred thousand years ago, the argument is irresistible, that savages existed one hundred thousand years ago also. The inferiority of the intellect which made the knives is justly inferred from the inferiority of the instrument. Granting the premises, the reasoning is irresistible. But why am not I entitled to carry the reasoning further, and infer from the superiority of an instrument such as the eye, that it is the production of superior intelligence? If a bad instrument proves low intelligence, a good instrument proves the presence of superior mental power; and a wonderful instrument such as the eye, the presence in previous ages of the highest mental capacity. In the human body we have the utmost complexity of relationship of parts; parts which we may not always comprehend; yet they prove intelligence, and that intelligence we call God. I do not think this argument can be got rid of because there are certain things about us the uses of which we do not happen to know,—as for instance, the uvula is said to have no use.

The CHAIRMAN.—I do not think so.

Mr. Row.—But *there* are parts which are said to be of no use: the uvula is even troublesome sometimes. What I mean is, that because we do not happen to see the uses of a certain part of the human body, the argument that the whole body is made by a superior wisdom is not invalidated. Take the various joints, and we see evidence of the skill of the mechanist, the greatest possible skill; and the manner in which they are made

to suit the various muscles, and adapted to the requirements of the human body, is something marvellous. Yet we may not see the end and purpose of them all. There are said to be typical parts of the human body. I cannot understand such a thing as order as distinct from skill and design. Order must be the result of intelligence; and we are positively incapable of believing that disorder comes of intelligence. If that is so, the existence of useless members does not by any means get rid of the evidence we actually have. That evidence is of immense amount, extending through the whole of animated nature; it shows adaptation, proves the presence of a designing mind, and upon that I rest the argument and the proof of the existence of a God. The moral proofs are even stronger. The idea of *ought* implies responsibility; and those who would deny it would have to reconstruct the entire structure of human language. They are obliged, after all, to use the ordinary language of men; and if you take any man who denies the independent existence of our moral perceptions, and says that morality can be resolved into simple expediency or self-love, the language he uses invariably contradicts his assertions.

The CHAIRMAN.—With reference to the 13th paragraph, Mr. Row did not quite explain Mr. Holyoake's error. I would have checked Mr. Holyoake myself had he not been quite so impatient. He simply left out an "if," and therefore his whole argument goes for nothing. The accusation that he brought against my paper is, that it avoids the question raised in the debate at which Mr. Holyoake presided. I think that is hardly so. It was written upon that very question, and within a month of that discussion. I invited those who were present at that debate to come to a free discussion upon it, and I suppose, as Mr. Holyoake has not said anything to the contrary, he was not present.

Mr. HOLYOAKE.—I did not hear it.

The CHAIRMAN.—My paper will also be printed; and if I had known earlier that Dr. M'Cann's had been so brief, I would have had mine circulated also. But Mr. Holyoake can yet have the opportunity of replying to it.

Dr. M'CANN, in reply.—I cannot accept Mr. Row's assertion that he has demolished me—

Mr. ROW.—I said I came with the intention of doing so.

Dr. M'CANN.—But you have spared me. You said you did not believe my argument capable of mathematical demonstration. I affirm that it is, and have given my reasons. I believe the position is axiomatic, and in demonstrating mathematics we string axiom to axiom—

Mr. ROW.—I should have contended that your axioms were not axioms.

Dr. M'CANN.—That is what I wished to have discussed. Whether my statements are entitled to the character of axioms or not, the propositions are asserted to be self-evident; and it does not require many words to explain them, and to show they are not only axiomatic but intuitive. If they are truly self-evident it suffices; whether they are intuitive or not, is a different matter. I, however, agree in much that Mr. Row has said, especially about the word "ought"; also that the moral argument is the strongest,

and that many thoughts are quite as certain as a mathematical demonstration can be. I would have, myself, no doubt about the existence of a Deity, although it could not be demonstrated mathematically. I may mention what occurred between Mr. Bradlaugh and myself about the word "ought." I pressed the meaning of that word upon him, and, in reply, he explained it thus:—"I have an understanding of it, as when I place a piece of paper above the flame of a candle to say it 'ought' to burn." Now, I say, no, the paper *must* burn; if the conditions of burning be absent, the paper cannot burn; there is no "ought" in the matter at all. As to my apology at the beginning, it was rather for the language than for the thought; and I certainly did not quote the passage about a fool with the view of using it as a sneer; when I wrote it, I thought of the words in the identical meaning explained by the chairman. A fool neither affirms nor denies the existence of a God; he thinks nothing at all about it; his thoughts are as one who is "unwise." The last paragraph in my paper does not apply to Mr. Holyoake, by his own confession. Mr. Holyoake does not deny the possibility of the existence of a God, though he differs about certain definitions that I have given with regard to Him. One is, that He is a conscious person—a personality. Now what constitutes the personality of man? The *mental* divergence between one human being and another. One man's thoughts, modes of action, motives, and characteristics, differ from those of another man, and in *them* we find that which makes up a human being's personality; the material, or outward form, is not his personality, as such. I use the word far more as regards intelligence in man than of him as a material organization. Mr. Holyoake acknowledges that when he sees a machine he believes in a framer or constructor, because he has seen machines made by human beings, and a machine indicates human intelligence, and that it was made by man. As Mr. Row showed us, all that we can do with regard to things that man cannot make is to intensify, as it were, what we know of our own power, and of our own intelligence. We know our own limits, we know that man can do certain things, and that other things he can not do; yet these other things are done, and we call the power that does them the power of the Infinite—that which produced creation and all the changes of nature that we see around us. Mr. Holyoake says that he intends replying to my address; may I request him to follow my argument as I have stated it, and not to miss certain parts. Only as he does so, will I consider his reply a fair one. In his address he did not touch the propositions that I call axioms. In his written reply, I trust that he will either acknowledge they are true or show that they are not; and, if he can do so, that they are false not merely as axioms but as propositions. As he purposes doing that, I will not notice anything further that he has said this evening, but will wait for his reply. And if Mr. Holyoake consults his brother, he will tell him that I shall not indulge in very objectionable language or harsh terms respecting him. Let me, however, make one remark about an observation which I had almost overlooked in my introductory paragraph. I spoke of those who denied the existence of a Deity altogether. No person is more ready or willing than I am to argue with a mere doubter, though I

am quite ready to admit my own shortcomings ; I do not believe in either the infallibility of the Pope, or of myself. But as to a person who *denies* the existence of a Deity at all, I can have no grounds of argument with him. If he point blank deny the possibility of such a Being, there is an end of the matter ; but if he say, "I do not think there is a Deity," or, "I cannot assent to the existence of a Deity," my reply is "Come and let us reason together." I would argue with a man who withholds his assent.

Mr. Row.—You just now referred to your axioms again. Do you mean to apply that word in your paper in the strictly mathematical sense of propositions ?

Dr. M'CANN.—Yes. But all propositions are not axioms. These are self-evident propositions.

Mr. Row.—And therefore axioms. I differ from you, then.

Dr. M'CANN.—That all these are self-evident propositions ?

The CHAIRMAN.—The difficulty that I, and I imagine others, would have, would be in knowing the exact meaning of them. The paper contains an immense number of these propositions, and sometimes the language you use I should not have understood in the same sense that you appear to do. We should therefore have had a mere verbal discussion without getting at the essence of the thing. That was one great difficulty which I have felt.

Dr. M'CANN.—Thinking of the Society before whom I was to appear, I supposed that all these preliminary definitions would be understood, and arranged my argument in a definite form to provoke discussion on the axiomatic character of my propositions. That was the point that I wished debated, but time is passing away without this being done. Mr. Holyoake has told us what is his belief, and what are his views ; but I do not think he has attempted to reply to my paper. As to the accusation of heresy, my language might be heretical, but the word "if" saves me from my spiritual pastors and masters. I can see how Mr. Holyoake fell into the mistake, for the "if" is in the previous sentence.

The CHAIRMAN.—I do not agree with Dr. M'Cann in his difficulty about replying to an out-and-out atheist, who plainly denies the being of a God. I myself would rather prefer that my opponent should put his views distinctly in the form of a proposition denying that God can exist, so that I might as distinctly meet him.

Mr. Row.—I wish to express my concurrence in that view.

The meeting was then adjourned.

ORDINARY MEETING, MONDAY, 4TH APRIL, 1870.

THE REV. GEORGE HENSLOW, M.A., F.L.S., F.G.S., IN THE
CHAIR.

The Minutes of the previous Meeting having been read and confirmed,

The Secretary announced that the Rev. WILLIAM S. SMITH, M.A., of Birkenhead, had been elected a member, and the Rev. H. H. BOURNE, F.R.S.L., of Ipswich, a 2nd Class Associate of the Institute.

The Secretary also announced the presentation of the following books to the Institute :—

“Christianum Organum.” By the Rev. J. Miller, M.A. *From the Author.*

“Fejee and the Fejeeans.” By the Revs. Thos. Williams and J. Calvert.
From the Authors.

The CHAIRMAN.—We will now proceed to discuss the paper read by Mr. Reddie before the Institute on the 7th March, its title being “Atheism Confuted by a new Argument ; or, Why Man must believe in God.”

Rev. Dr. DEANE.—I rise to order. It appears to me that the discussion of this paper is hardly within the scope of our Society. It may seem bold on the part of a private member to suggest such a thing when the Council of the Institute have arranged their plans ; but my reasons for doing so are these : first of all, the course now adopted displaces the paper which was already put down in our programme as the paper to be read and discussed to-night—I mean Mr. Morshead’s paper on “Comparative Psychology.” Many people may have been induced to come here to-night in order to hear Mr. Morshead’s paper read ; but that paper is suddenly withdrawn, which is rather an unusual proceeding, that ought not to be adopted without very good reason for it. I do not, however, press that point ; but I venture to think that the discussion of atheism does not at all enter into the duties or intentions of this Society. I will not trouble you by reading all the objects for which the Victoria Institute was formed, but the first object, as printed in our Transactions, is—

“To investigate fully and impartially the most important questions of philosophy and science, but more especially those that bear upon the great truths revealed in Holy Scripture, with the view of defending those truths against the oppositions of science, falsely so called.”

Now I do not see how this paper does defend these truths against the oppositions of science. It does not appear to me to be upon any positive subject whatever, because atheism is a negation—it is clearly no science—

and therefore a paper on that subject cannot be read with the object of refuting any discovery of science. If atheism be a positive subject, then of course I am wrong, and we are at liberty to discuss the matter; but at present it does appear to me that atheism is quite out of the scope of our Society altogether. I should not, perhaps, have risen to make this protest had it not been that on two occasions when I have attended here I have met gentlemen who have not appeared here as members of the Institute, but who have been present as visitors, and they have been persons whose known opinions are antagonistic to Revelation, which is the basis, I believe, upon which this Society is founded. Of course we have no power to exclude these gentlemen, but it is to me very questionable whether we should step out of our way to invite them here. I do not know that they were invited to come, but they seemed to sit by themselves as if they had not come with any friends, and I therefore suppose it possible that they may have been invited with the knowledge or connivance of the Council or of some members of the governing body in order to provoke an interesting discussion. If that has been so, I think it to have been a great mistake, because, though it is true that by having such exciting discussions you get your meetings talked of and your rooms filled, I do not think you help onwards the instruction of the country and the maintenance of the truth of Revelation, which I have always understood was the object for which the Society was formed. I feel very diffident in laying these remarks before you, and I have made my observations brief because I do not wish to take up your time, although I feel strongly that such a paper as this, and such a discussion as is likely to arise out of it, are not within the scope of the Society. Such an opportunity gives occasion for atheists and freethinkers to come forward and publish their opinions, which are calculated, as I believe, to do more harm than is counterbalanced by the good done by the reading of any refutation of their views. I beg leave to move, founding my motion on a point of order, that the Chairman call on Mr. Morshead to read his paper.

MR. REDDIE.—I did not interrupt my friend Dr. Deane, who, although he rose to order, has made a somewhat disorderly speech, because I was sure that what he did was done in the best spirit, and I should like if possible never to oppose speaking except by answering it. This is not, however, a meeting for discussing the proceedings of the Council or the propriety of our entering upon this or that particular question; but I should like to make an explanation with regard to Mr. Morshead's paper which Dr. Deane has spoken of. I do not know whether Dr. Deane received a copy, but a note was intended to be sent out to every member of the Institute, and I believe it reached most of the members, explaining that Mr. Morshead's paper would not be ready for this meeting, and that its reading would be postponed. Now, the discussion of my paper was taken in its place simply because you cannot, at a moment's notice, improvise a paper. And now one word with regard to those strangers referred to by Dr. Deane as having been present at two of our meetings when we had cognate subjects before us. It was deemed advisable for the interests of the Society to take a discussion on my

paper, which was only read, if I may so say, to fill up a gap in our proceedings, and read with some apologies on my part for bringing it before this Institute. We felt it desirable that a paper on such a subject should not seem to have been read without discussion, the more especially because it was a paper by the Honorary Secretary of the Institute. Our usual practice has been to print our papers first, but this one was read at a moment's notice, another paper read previously being very short and not thought sufficient by the Council generally. Under these circumstances I read my paper from the manuscript, and apologised for its character, as it was not written to be delivered in this Institute at all. I should, personally, be very sorry if a paper of this kind had gone forth as if it had had an unfair advantage over other papers, and Mr. Holyoake made it an objection to joining issue with me that my paper had not been printed. That was almost, I consider, an excuse rather than a valid objection, inasmuch as the paper was written in answer to some atheistical arguments urged at a meeting over which he himself presided, where there were no printed papers made use of. I have now in my hands a letter which I have received from Mr. Bradlaugh expressing his regret that he could not be here to-night because he had to be in Leeds to deliver a lecture. He says :—

“ 31st March, 1870.

SIR,—Unfortunately I lecture at Leeds on the 4th, or I should have had great pleasure in taking part in your debate.

“ If your Institute could nominate a representative man, I could have little doubt that most of the English and Scotch Freethinkers would approve me as their representative, and that a public debate might be arranged usefully.

“ In any case I propose to do myself the pleasure of examining Mr. Reddie's paper in the columns of the *National Reformer* at an early date.

“ Yours,

“ C. BRADLAUGH.”

I wrote to tell him that I should bring his letter before the Council, but that I did not anticipate they would accept his proposal. I added that if he were to write a paper on the subject the Council could not accept it as part of the proceedings of the Institute, because it is beyond the scope of our objects to allow an atheist to come here with a paper. We have, however, met these gentlemen with great consideration whenever they have come among us. I differ from Dr. Deane in thinking that the subject of my paper is a subject which we ought not to discuss, and I believe it is a subject on which science takes antagonistic sides. We had in our inaugural address Mr. Michell's argument on design put forward as against Darwinism, and the men of science do not conceal their views, but tell you plainly that they deny the argument from design. It is therefore out of the question to say that this subject is beyond our scope. But, after all, this is really a question for the Council, and you will find by our laws that our objects and the propriety of our proceedings are not open to discussion at the ordinary meetings. This is one of our ordinary meetings where we have friends invited to attend, and the one subject before us, as the Chairman might have ruled

without hearing Dr. Deane, is to discuss this paper. We cannot have Mr Morshead's paper read to us, because the Council found this paper was so meagre and so short that it might well be extended over more ground, so as to exhaust the subject more effectually. Under these circumstances, this night became an open night with no paper for discussion at all, and the Council have acted according to the best of their judgment in the matter. It has been no choice of mine that a paper read originally in 1852 should now be read here again. My paper was not prepared for this Society, but having been read I think it would be better that it should also be discussed. I am sorry that Mr. Bradlaugh and Mr. Holyoake are not here to-night. When the paper was discussed before, they scarcely put in an appearance against it.

Rev. C. A. Row.—Let me state what part I have taken in this matter. When I read the other paper which was brought forward at the same meeting with this one—I mean the paper by Dr. M'Cann : “A Demonstration of the Existence of God,”—I was of opinion that it would not hold water. I saw Mr. Reddie on the evening previous to the meeting, and I advised the production of his paper without the least knowledge that any infidel would be in the room, because I thought the other paper was inefficient, and I thought it desirable to get a better one to place upon our records. That was done without any knowledge on my part that Mr. Holyoake was coming. When I found that he was coming, I only felt the more anxious to raise a tangible issue instead of one which a man could most effectually demolish in a moment, because I came myself prepared to attack Dr. M'Cann's paper even more severely than Mr. Holyoake did.

The CHAIRMAN.—I need only remark that my own feelings sympathize with the action of the Council in admitting this subject for discussion. When we consider the position of those who are connected with science, and when we know how infidelity and atheism are probably gaining ground among not the least intellectual order of the English people, I think we are right in attempting to meet such a state of things and in supporting our own belief. I think the Council is perfectly justified in introducing a paper and discussing an argument which have for their object the dislodgment of atheism and the establishing a belief in the Deity. I only regret that Dr. Deane did not receive notice of what was to be the course pursued this evening, and I think I shall be right in asking Mr. Reddie to go on with the discussion of this paper.

Mr. REDDIE.—My object in writing this paper was not to bring forward the argument from design, because I always felt that there was a difficulty in dealing with that among those who did not see design, whereas the moment a person sees design in nature the argument from design is no longer necessary. When once you enlighten a man and let him see that the cell of the bee or that the eye could not have been formed without design, you have done enough. The cell of the bee is of the most wonderful construction, exhibiting the greatest economy of space, and yet it is not produced by any intellectual process, but instinctively. We argue that it is produced by a

gift from the higher mind of God, and the moment a man understands and sees design in it, he cannot attribute it to the animal. When a man sees that, he ought to see the hand of God in it, but if a man like Mr. Darwin for instance does not see this, you must bring some other argument to bear upon his mind. My object, then, was simply to meet some arguments brought forward in 1852. I omitted one or two points from this paper when I read it here on the 7th March, they being points which were more especially connected with the discussion which took place in 1852, but I allowed them to stand in the print because I could not recast the paper, and because they bore on arguments involving the same kind of subterfuges which have been brought forward by others when they have discussed the subjects. One of the omitted arguments, however, at the end of the paper, I may perhaps be allowed to read now. Several people say now that the main scope of our argument has gone a step lower, and that instead of arguing from design, we say now that there was at least intention. Many people do not know what the phrase "final causes" means : many people look upon it as meaning immediate cause. Now final cause has nothing to do with cause in that sense. It may be a good or a bad phrase, but it means the reason of a thing—which is the absolute origin which a thing has had. There is much misapprehension about that, and I want to trace out an argument to show that there was at least intention—that you could not attribute to dead matter itself or to an animal that merely acts under instinct, the working of this superior intelligence, but you must fall back upon a superior and intelligent being—and I think that argument may reach the minds of men who are blind enough not to see design in nature, or who will not admit that they see it, whether they are blind to it or not. I will merely add that the only argument brought forward against the paper in the discussion which took place upon it in June 1852, was what I may call the mere chop-logic argument of Mr. Holyoake—not Mr. Austin Holyoake, but his better-known brother—that if a watch requires a watchmaker and a man requires a man-maker, then God requires a god-maker. That is an argument which cannot be hushed in this way. No doubt we require a maker for a watch ; we know that its various wheels are put together by a man, and we know that mere matter itself could not do that by accident. No fortuitous concurrence of atoms such as Lucretius talked of could do it ; and if the argument is that no fortuitous concurrence of atoms could put man together, then we see the necessity for a preceding power that could make man. But to go on and say that that preceding power would also require a maker, is to argue from mere words or sounds, and not from sense. (Hear, hear.) That was the real issue of the argument then, and I should not have mentioned it at all if I had not expected Mr. Holyoake or Mr. Bradlaugh to be here to-night, because, if the argument is not given up by them, I should have expected them to come forward and maintain it. I mention it now in order that they may expose the fallacy of my position, if they wish to do so.

Mr. Row.—I feel under some difficulty in continuing this discussion, because when the subject was last before us I spoke upon it, and I shal

be in great danger of dividing my remarks into two portions each of which will look incomplete in our printed report, and the result will be that my argument cannot fail to lose something of its force and character. Now, as to the desirableness of our discussing a subject of this kind, it is very obvious that we do want to have a thorough discussion of the great principle which is now so openly impugned by a large number of scientific men—that is, that you can prove the existence of a designing mind. I have long felt and earnestly desired that a paper based on thoroughly philosophical principles should be submitted to us, containing the mere philosophical arguments on that point, and I am sure there is nothing in the present state of thought, so far as I am acquainted with it, which is more required than that that point should be brought to something like a settlement. I own that when I read some of these works I am filled with the most profound astonishment; for I cannot understand how it is possible that a rational mind, when it contemplates this subject, can arrive at the conclusion that the marks of intelligence in nature, as I must call them for want of a better term, do not prove the existence of intelligence as their author. Mr. Reddie has said, in his 6th paragraph:—

“I have no intention in this lecture of enforcing further than I have done what is called ‘the argument from design’ in favour of the Being of a God, *i.e.*, the argument that there must have been an intelligent designer of things visible, deduced from the marks of design we can trace in the works of nature around us. The argument is an interesting one, and has been admirably treated by Paley and his commentators; but to some extent it involves a *petitio principii*, a begging of the question, or what is almost tantamount to it.”

Of course in one sense I am willing to admit that it does involve something like that, but I do not think we should use the words with that meaning which is often attached to the phrase “marks and indications of design in creation.” I do not restrict it to an utilitarian theory of design. All I mean is that I see in created things certain powers or objects which are apparently adapted to produce certain ends, and without being too nice about the words, I would use the term design to mean simply the idea of that adaptation of means to ends which I discern in creation. (Hear, hear.) That is my general idea of what is meant by the argument from design. So far I hold it strongly, and it seems to me one of the most marvellous things that a man like Darwin should dispute a matter which is so absolutely and entirely plain. On a former occasion I entered into this subject at some length in answer to Mr. Holyoake, and I do not think it is altogether desirable to reproduce exactly the arguments which I then adduced; but it is after all the great moot point of the present day between theists and atheists as to whether creation does contain indications of a designing mind. I am able to infer, from an ordinary piece of human workmanship, even when I do not see the workman, that that work, from the adaptations which it bears, must have been the result of the operation of human skill; and I cannot understand, when I see exactly similar adaptations in nature itself,

only of a very much superior kind, and on a much grander scale, why I am not to infer that these adaptations are also the result of skill. I will mention now one or two illustrations in addition to those which I gave before to show the absurdity of the position of those who deny design. Suppose we are going through the picture gallery of the Louvre—you know that there is in that gallery a great picture of the Marriage at Cana in Galilee. Now that picture proves the presence of intelligence and of design on the part of the artist who painted it—no one can doubt that for an instant. The picture consists, as you are aware, of a large number of figures—different persons assembled together—and among the others, strange to say, there are several dogs, for we know that dogs were always excluded from Jewish feasts. Now bear that picture in mind for a moment. Suppose one was observing it attentively and some one came up to you and said, “Oh, sir, you are entirely deceived. That is not the work of a single artist. That picture was painted by a set of men who some years ago took it into their heads to paint a whole lot of figures, and some one else came and put them together and made the picture.” Why even that would not be so absurd as the argument against design, because you would still be able to say, “Even that shows a high degree of intelligence on the part of the man who could select his materials from a whole heap of previously-formed figures and put them together so as to make the picture.” But to make the analogy more perfect, suppose that it was asserted that those figures had simply come together by some law, and in that way the picture had been produced. I should think it a sufficient answer to say to the person who told me all this: “Do you really take me for a fool?” (Hear, hear.) I should think that a sufficient answer to make to any man who dared to allege such a monstrosity to me. I own I have never seen the person who painted the picture, but from looking at the unity of the composition and the harmony of the various parts, I draw this certain conclusion, that the picture is a work of very great genius. What we are urged to believe now is that when we see similar works in the great kingdom of nature from which we could infer the presence of a designing mind as certainly as we can infer the presence of a designing mind presiding over the composition of the painting, we are altogether wrong and have no right to draw such an inference. That is a very fair statement of the case as between ourselves who believe we can see the most indubitable evidence of the presence of Deity in nature as against those who say they can see no such evidence. I think I have before quoted an instance which now again occurs to me, derived from the Alban Lake at Rome. Long before the Christian era, there was a lake in the neighbourhood of Rome called the Alban Lake, which overflowed the country round. At some period before the dawn of history, however, a channel was cut to drain off the water from the lake and prevent it from overflowing the neighbouring country. That channel is still in existence, cut through the rock. Now if we go and look at that channel and see the purpose it was made to answer, we shall be sure from a survey of it that some six centuries, perhaps, anterior to the Christian era there were men who had the powers of intelligence and design and who

cut the channel Although I have never seen those men I am as satisfied of that as I am of the existence of this table before me." Now if we apply that to an exactly analogous thing in the human eye, the argument will be complete. The human eye is a kind of Alban Lake producing a tear the object of which is to wash the eye, but sometimes the wash gets a little too much in quantity, and if there were not some means provided for drawing it off it would make a mess of our faces. The Creator is equal to His work, however. He has cut a hole or channel through the solid bone of the nose, and that channel carries off the surplus moisture. (Hear, hear.) That channel is cut at a place where the warm breath from the stomach meets it and dissipates the tear, under all ordinary circumstances except when we have a bad cold, into simple vapour, and we are not further inconvenienced by it. Now, if we can infer, from an inspection of the channel which drained the Alban Lake six centuries before the Christian era, that intelligent men were in existence, I want to know why, on inspecting the channel which drains the eye through the nose, and provides warm breath from the stomach to dissipate the moisture, we cannot infer that that is a proof of intelligence and skill existing anterior to the creation of man. The one argument is the very counterpart of the other in point of logic. We see that creation is filled to an enormous extent with matters of this kind—filled to such an extent indeed that we want all the powers of the mind of man to grasp the very conception of such things. There is nothing in London which gives me more satisfaction than to walk in the Zoological Gardens and inspect the birds there. When we look at the long-legged birds, and see the wonderful adaptations whereby those legs are fitted to the length of the birds' bills, we cannot fail to be struck with this wonderful provision of nature. The birds are placed on so high a pair of stilts that it seems a marvellous thing how they are enabled to balance themselves on one leg with the other leg drawn up under the breast. But inasmuch as the bird has to live by fishing up something from underneath the water, if the length of the bill were not made in exact proportion to the length of the leg, the animal would starve. It seems to me, then, that as the whole of the parts of that animal are respectively adapted to each other, every portion being exactly fitted to every other portion, this denotes the presence of skill precisely in the same manner that the handiwork of any human workman denotes, in a minor degree, the presence of skill presiding over it. Here we have a work which shows, I do not say that an infinitely perfect God presided over it, but at all events a skilful artificer. Now how is the conclusion of design to be avoided? for that is the real question. When scientific men leave the purely scientific departments with which they are acquainted and venture into the region of metaphysics, their views on metaphysical matters do not of course carry the same weight as their views on scientific matters. A man may be a most eminent naturalist, and I will not contradict him on a point of natural history, but in metaphysics I feel myself entitled to question his utterances as not necessarily to be considered oracular. Why is it that we are not to be allowed to infer from the mechanisms of nature that they were produced by

the powers of a designing mind ? The only means of evasion is by juggling with infinity. We are told that in the past infinity of time there has been a perpetual succession of chances acting through a succession of immutable laws of nature, and at last, as the result of that infinite succession of chances, the complex mechanism of creation has been produced. Take, for example, the Darwinian theory, encumbered as it is with great metaphysical difficulties at every point. It presupposes the principle of natural selection ; but how does that principle act so as to get rid of a designing mind ? The stronger things destroy the weaker, and then, by means of an infinity of chances, nature goes on producing and producing and producing until at last up turns the right thing. It is a common sophistry to fall back upon infinity whenever you are hard driven. People go on drawing cheques upon the bank of Infinity which they cash upon other people's imaginations ; but these cheques never become current money. (Hear, hear.) The argument proceeds upon a total misconception of the real character of infinity which I endeavoured to expose in one of the papers I read here. A confusion is made between the non-finite and what we call the infinite. I will not, however, enter into that question now, but I want to point out one other very serious difficulty with which such a theory is encumbered. Suppose for a moment that all animated nature has been evolved under this law of a succession and by the aid of natural selection from a single type. Take as an illustration a horse evolved in this way. I do not know what his immediate ancestor would be ; I suppose an ass ; but at any rate it is necessary that, whichever he may be, by a happy succession of natural selections, and by the aid of an infinite number of happy chances, he should get a bit better and a bit better until at last you produce the horse. But in this stage of production you encounter one very serious difficulty, because there is a point at which hybridization steps in, and that is a very formidable objection. The ass and the horse produce the hybrid called the mule, and here you come to a dead lock.

The CHAIRMAN.—Much of your theory must run with the idea that there is a probability of the horse coming from the ass. That is an utter impossibility—people must not be led to suppose it possible.

Mr. Row.—I merely point it out as a logical illustration, and not a physical one. Suppose you get the hybrid—the mule. Now to make the theory capable of working, to preserve the race of horses, and to evolve a still finer animal out of the horse hereafter, it is necessary to get a mare somewhere. Well, you see that involves another succession, and the application of the same amount of changes and suitable adaptations by the mere aid of chance. We have then to deal with a number of suppositions, each encumbered with this extreme difficulty. If you can produce the horse and the mare in this way, you must produce the one within a very moderate distance of the other. You cannot produce one in Europe and the other in America, or the race would become extinct. You have to produce them within a very moderate distance of each other, and this at once makes the whole thing break down. There are not only these difficulties to be encountered, but when we come to survey the entire subject, we have to look at another side of the question

beyond the mere argument which we can adduce from the proofs of a designing mind in nature, which is only one portion of the argument for theism. The other portion of the argument is derived from the existence of man's moral nature, and from the existence of himself as a self-conscious being. At our last meeting Mr. Bradlaugh uttered some expressions in which he fell into metaphysics with regard to the impossibility of proving the origination of force. I thought of answering him then, but the chairman was too quick for me. I will not answer him now, as he is not present, but I think the popular theory of causation is not entirely satisfactory. The common theory is, that it is simply a sequence—that it consists of an antecedent and a consequent. That may cover a great deal of causation, but there is something in my idea of causation which is not entirely satisfied with it. We form entirely different ideas of a cause from a mere antecedent and consequent, and that idea of a cause is derived from our own self-consciousness. I know that I myself am the cause of certain things which re-act on my consciousness and are subject to the control of my will. I cannot think therefore that the present theory of causation is satisfactory. It is satisfactory so far as it gets rid of the older theories of causation adopted by the ancient philosophy. It is upon a true theory of causation that I think a very large portion of the proof of the existence of the Deity may very properly be based. But in addition to this I want to draw attention to one other very strong source of proof of the existence of the Deity apart from the mere evidence supplied by external nature, and that is the moral constitution of man. There is such a thing in existence as the idea of "ought"—duty or whatever else you may like to call it. We always feel this sense of duty; we cannot help it; it is a part of our conscious being, and we cannot get rid of it. That proves that there is some law pervading the universe beyond the mere physical sequence of cause and effect—a moral law totally different in its character from the law which binds together material things, and the existence of that law proves the existence of a Being who is himself the source and author of that moral law. Now let me offer one brief criticism upon Mr. Reddie's paper. I concur with the criticism in the latter part of it as to our perception of external objects. If we analyze our perceptions of matter, the truth is that the only things we are conscious of are the perceptions of our mind—the reports, so to speak, which are furnished by our senses. They do not prove the externality of things—that is matter of inference, and the only thing of which we have positive and distinct proof is unquestionably not the existence of matter, but the existence of mind. So true is that, that when you apply a rigid mental analysis, say to this table, all you know of it is its length, breadth, thickness, hardness, and its other qualities, and when you come to seek for the matter you do not find it at all. But I am quite prepared to concur with Mr. Reddie in thinking that the existence of matter is an actual fact. It must not be supposed that I do not attach very great weight to the common-sense view of mankind that there is a definite and independent existence of what we

call matter apart from mind. We cannot prove it by rational processes, but the Creator has so constructed the human mind that it is impossible for me, notwithstanding all the analysis I may apply to the elucidation of material things, and their qualities,—it is impossible for me not to believe that there is something real and external in the existence of matter. (Hear, hear.)

Dr. HAUGHTON.—In reference to what has fallen from Mr. Row with regard to the analogy between the Alban Lake and the channel from the human eye to the nose, I may say that there are one or two other evidences of design in the construction of the human nose. Mr. Row has told you that the overflow from the eye passes through a channel which is cut in the solid bone, and when the tear gets into the nose it is dissipated by a hot blast of air. Now, the bony portion of the interior of the nose is very spongy or cellular in its character, having a very large surface, and over that surface there are a great many vessels containing a considerable quantity of warm blood, so that when the air passes through the nose it comes in contact with that warm surface. When we draw air into our lungs, if we breathe through the nose, as we commonly do, that air comes in contact with the warm surface, and is deprived of its coldness and its moisture before it reaches the lungs; and as it comes back again from the lungs the warm air which has just quitted the lungs warms the interior surface of the nose again, so that very little of the heat is lost. That is a distinct evidence of design, the very structure of the nose being so arranged as to allow an enormous quantity of blood to pass through it. This shows that the blood goes there for some such purpose as I have explained; and we know that it does answer that purpose; and we are doubly sure that there is design in this arrangement. We know that as the outside air is of a lower temperature than the body, it is important that it should be assimilated to the heat of the body before it is drawn into the lungs. Any delicate person will at once appreciate that. Then, again, you find in children that the nose is not fully formed at first—young children have a very small cartilaginous button, not at all like the nose which they get as they grow older. (Laughter.) The intention is evident—if the child should fall, as children will fall, it will not break its nose and mar its appearance for the rest of its life. (Laughter.) If we were all born with large projecting noses, we should very few of us arrive at maturity with anything like a decent one. (Laughter.)

Rev. J. H. TITCOMB.—I scarcely feel qualified to enter into this discussion as many might do, for though it may be said to involve a section of theology, yet I feel that my presence in this room and my adhesion to this Institute stand more in connection with natural science. I have a greater wish to improve my knowledge of natural science than to air what little acquaintance I have with moral science in relation to theological questions. At the same time, under the interesting circumstances that call us together, and with this highly interesting paper before us, I should be the last person not to do what I could in offering a few words as my contribution towards the solution of this very important question. I will only preface my observa-

tions by saying that I think it is a melancholy exhibition of the human mind that, after the magnificent Bridgewater treatises which we have had to show the skill and wisdom and design of our great Creator, modern science should raise up a spirit of disbelief, reversing the decisions of those treatises, and venturing in its puny strength to deny the existence of a Creator. At the same time we must all agree that, apart from divine revelation, the existence of God is not capable of any demonstration which has that degree of certainty which attends a demonstration in mathematical science. There can only be an approach to a proof from design and moral evidence. I would put it in this way: we have ground for believing that it is more antecedently probable that there is a God than it is antecedently probable that there should not be, and although the probability is of the very highest degree, so high as to amount in its transcendental force almost to a certainty, yet it still takes the nature of that which Butler calls an antecedent probability. I take up a piece of inorganic matter—a piece of sandstone without flaw—and I look at it and ask whence it came. I think we must agree that either in some shape or other—either as it now stands or in some previous form—it must have existed eternally as matter in that inorganic state or it must have been created. I am not aware that there is any third position. Can you say whether there is, Mr. Row?

Mr. Row.—No, I think not.

Mr. TITCOMB.—Well, that inorganic matter must have existed eternally or it must have been created: let us assume that much. Now we must reason with things as they are, and deal with the forces of nature as they exist around us. We have no right, in estimating the antecedent probability of the one position or of the other, to reason in any other way than by accepting the laws of nature as they stand. The sandstone as it exists in my hand may have been at the bottom of the sea, or it may have passed through a thousand changes lasting through cycles of ages of which we know nothing; but from the first it must have been a piece of inorganic matter while all these changes have been going on. Now, in considering this question there are but three suppositions which are open to us, assuming, as our starting-point, that there are constant evolutions and changes in nature which shape inorganic matter through successive ages, and which have shaped all inorganic matter into the form which it bears now. There are but three suppositions open to us—these changes and evolutions must have been produced by natural or external forces or by both together. There are volcanic forces and centrifugal and centripetal forces, and these are the external forces by which the evolutions of natural substances have been carried on through past ages. Now either those evolutions have been progressing from some starting-point—before which there was no such evolution, or the evolutions must themselves have been eternal. These are the only two grounds upon which we can argue. Suppose the evolutions have not been eternal, but that at some remote period there was a starting-point where the first evolution and first force began to operate upon all the atoms of nature. The question is, whether there is a

greater antecedent probability that that congeries of atoms, or any piece of inorganic matter which, before the evolutions commenced, had been eternally stationary and isolated, existing without motion, life, or power of development, should have been capable of this development afterwards by evolution; or, on the other hand, that those atoms should have been themselves created by an intelligent and designing mind. (Hear, hear.) Mr. Reddie's paper shows that the antecedent probability is far more in favour of the latter view than of the former. The paper proves that, as I take a stone and throw it into the air, a motion is induced by the effort of my will; so, when the moon moves round the earth or the earth round the sun, there is something analogous between the two cases. As the stone would never pass through the air without my design, so the moon would never go round the earth or the earth round the sun without there being some corresponding design, and it is more antecedently probable that the dead inorganic matter should have been evolved from a designing mind and an overruling and supreme cause—in short, from what we call the Creator—than that it should have been eternally self-existent and have had some force applied to it without rhyme or reason. Assuming the other theory to be true, and that these evolutions of nature have had no definite starting-point, but have been themselves eternal, and, like matter, self-existent, let us see how that would operate. Is there any antecedent probability that there should have been an active law regulating inorganic matter eternally, so that you can never conceive a time, however remote, without that active principle and law going on evolving and disintegrating and evolving again? Is that more antecedently probable than that these moving powers should have been produced aboriginally, as we all as Christians believe, by our great Creator with design for the grand moral purposes he had in view in forming intelligent creatures on the earth, and it may be in other worlds also? If these forces of nature have not been brought about by intelligence, they must have been brought about by chance or by necessity. That they were not brought about by chance has been well shown in the Bridgewater treatises and by Paley in his *Natural Theology*. All the evidences of design such as that mentioned by Mr. Row in comparing the formation of the eye and nose with the Alban Lake are very full and very satisfactory. I will not occupy your time therefore with that point, for it has already been dealt with satisfactorily; but with reference to necessity, some of the old heathen philosophers believed in the eternal existence of force as a matter of necessity, having an impersonal deity in the shape of an eternal necessity of force. But if the physical forces of nature existed eternally as a matter of necessity, I ask this question: What about the forces of mind and morals?—what about mental and moral forces? Have I not as much right to assume that they existed of necessity from eternity, as any one else has to assume that the physical forces should have existed of necessity from eternity? (Hear, hear.) I know that that is a weak point in Mr. Reddie's argument, for if Mr. Darwin were here he would not scruple to say that mind has been evolved from matter, and he would not

allow that distinct separation to be made. Now if mental or moral forces may be said to have existed as of necessity from the beginning, we are necessarily thrown back from the nature of such a supposition to the greatest of all causes—the eternal mind. That the great Creator exists of necessity we must all allow, and that He is a self-existent Being with everlasting existence. That being so, I do not so much object to the idea of the world as existing from an eternal necessity. It is only in the application of that principle to inorganic matter that I cannot believe it. In that sense I think it is against the nature of things, but that the Great Cause of all things should have existed from eternity is quite clear to my mind and to my conscience. Having so existed, it is also clear to me that He has been pleased to make matter and evolve it—whether out of nothing or, as the pantheists say, out of Himself, I am unable to say. That question is, however, quite removed from the sphere of atheistical argument. I wish I could throw more light on this subject than I have been able to do, but I have just offered you a few thoughts which have occurred to me. (Cheers.)

MR. BROOKE, V.P.—I think I need hardly express my entire agreement with the scope and object of this paper, and it is only for the purpose of strengthening it that I am anxious to point out one or two weak points which, as they stand, seem to detract from its strength as a whole. Mr. Reddie says in the 8th paragraph,—

“But then, when we remember that although cold does change thin vapour into the denser fluid water, and renders fluid water hard and solid, yet it only rarefies the air and adds not to its solidity.”

If Mr. Reddie ever saw a hot-air engine, he ought to know that air is rarefied by heat.

MR. REDDIE.—You misunderstand me. I stated that cold does rarefy the air, but I do not say that it is the only rarefier.

MR. BROOKE.—But cold cannot rarefy the air in any way.

MR. REDDIE.—Then I own I have been under a mistake.

THE CHAIRMAN.—The air is much denser in winter.

MR. REDDIE.—That may be so in this climate, but I always understood that in the Arctic regions it was the reverse.

MR. BROOKE.—That is altogether a mistake. If the moist air be lowered in temperature it would become denser, but if raised in temperature it would be increased in bulk, and therefore rarefied. The rarefaction of air by cold is a simple impossibility. In the same paragraph, a little lower down, the paper would have been strengthened if one of the strongest arguments from design presented in the works of Creation had been attended to. Mr. Reddie says :—

“So that, if cold be abstract matter, by adding it to water the water increases in bulk and lightness, but added to metals they grow smaller, and, in proportion to their bulk, heavier ; which would seem to prove, if we admit not have any stick-together attraction until they had been subjected to heat

weight as any criterion, that cold neither gives nor takes any material particles from bodies, and therefore cannot in any sense be regarded as essential matter."

I think the fact ought to be put on record, as is done here, that water is the almost solitary exception among material bodies which exhibits contraction by heat and expansion by cold. It is well known that the densest water is to be found at a temperature of 4° centigrade, or $39\frac{1}{2}^{\circ}$ Fahrenheit, and that from the point of its greatest density down to freezing-point the water expands. Now that is a wonderful provision of nature, because the water is the habitat of a very large number of created beings, and if it were not for this provision life would be destroyed in the colder regions. Suppose water contracted continuously instead of expanding with cold: as fast as it froze on the surface, the particles of ice would fall to the bottom, and we should have the ocean frozen into one solid lump. This is a most important fact, which I think Mr. Reddie might have referred to with considerable force. (Hear, hear.) At the bottom of the same paragraph Mr. Reddie says,—

"While if we say that matter must be colourless, what is that but to say that it is invisible?"

Now that I really cannot admit. If in summer time we take a glass of water from a cool limpid stream, neither the limpid water itself nor the glass which holds it contains any colour, and yet neither of them is invisible. The presence of colour is not necessary to visibility. In the 10th paragraph Mr. Reddie objects to some terms commonly used in physical science; but his objection, so far as I can see, is made without good reason. He says:—

"Glass, when formed and joined in a certain way by means of fire and then allowed to cool—for the cold is as necessary as the heat, you know, to produce the solidity—has certain qualities of hardness, solidity, and elasticity; but these qualities it has as a whole only from some law which regulates the cohesion of its particles—'the attraction of cohesion' it is scientifically, or rather technically called; but if by attraction we mean 'drawing together,' and by cohesion 'sticking together,' and translate the phrase, it will stand 'the drawing together of that which is sticking together,' and, you will agree with me, this technical phrase adds little to our ideas on the subject."

I do not agree and I cannot agree with Mr. Reddie in this passage. The term "cohesion" is a qualitative addition to the term "attraction," and we say "the attraction of cohesion" just as we say "the attraction of gravitation," the term "gravitation" being also a qualitative addition to the term "attraction." If you were to Germanize it, the attraction of gravitation would be the "weight attraction," and the attraction of cohesion would be the "stick-together attraction," and I should have no objection to that at all. Suppose these particles of powdered glass which Mr. Reddie speaks of were scattered through a portion of infinite space at such a distance from all other bodies as that their weight attraction to each other would exceed the weight attraction of the stars. They would come together by their weight attraction, but they would then be a mere aggregation of particles—they would

The two qualities are very different qualities, existing according to the conditions under which the matter is placed. I do not see, therefore, that Mr. Reddie's criticism upon the use of these terms has any very good foundation. These are all the points which have occurred to me in relation to this paper. (Cheers.)

REV. S. WAINWRIGHT.—I do not know whether I shall trespass too much on your time, but I have not been here for more than a year, and, indeed, I came here to-night hoping to hear read a paper on a totally different subject. I join in a large degree in the feeling to which Mr. Titcomb has given expression, because it has always been my desire to come here in order that I might learn what I could on the scientific side rather than contribute to the discussions on the theological side. Still I think there is a danger in retaining one's theology and in standing aloof from argument as if theology deserved to be so badly thought of as it has been lately. Even in Bishop Butler's time he tells us that the truths which were called the Christian truths had come to be regarded as unreal, and to be discarded without examination. The same thing exists now, but with a greater gravity, which makes it the more noteworthy. Still I think Christian ministers can hardly be doing justice to their solemn functions when they stand aloof, forgetting that it is the first requisite of a minister that he should be a man; and if a minister, whatever he may be in addition, does not forfeit his own manhood, he can never look on with indifference, and never forget his right to speak out openly on all matters which are dear to him, because it is in the power of others to say that he speaks professionally. We must be judged by what we say and by the grounds upon which we say it, and not by our profession. I cannot but think with regard to this paper that there might be applied to certain scientific men the language in which one of the Fathers described certain divines. He said, "It is true that there are ministers whose lives so ill comport with their profession that they might be compared to fishes, which, though always swimming in brine, have yet no salt in themselves." (Laughter.) There are quasi-scientific men clothing themselves in scientific garb, and saying "We are the men of wisdom," but they have no scientific salt in themselves, although they swim in the brine. (Hear, hear.) It is as well to test their pretensions and examine what they are like. I do not blame Mr. Row for one thing he said, and I maintain that he showed his wisdom by declaring that he would not enter into the question of the distinction between the non-finite and the infinite. I do not deny that an attempt has been made to set up such a distinction, but it is an illustration of what I venture to call darkening wisdom by words without knowledge. You do not seriously mean to say that "non" means not, and "finite" bounded, and yet that "not bounded" is a very different thing from "unbounded"? If you do, I say "Thank you for nothing." That sort of reasoning would not do in any of the relations of your daily life, and the sort of philosophy which will not stand material tests is not the sort to be listened to when spiritual issues are involved. (Hear, hear.) Mr. Row said he would not go into that distinction, and I think he thereby showed his wisdom—

Mr. Row.—I only referred to it to show the confusion into which the author of the paper had fallen by mixing up different matters.

Mr. WAINWRIGHT.—Then I understood Mr. Row to say that all that we know of this table is mental, and I could not but think of Adam Smith's servant——

Mr. Row.—I made a qualification by saying that I believed the table did exist.

Mr. WAINWRIGHT.—Well, I will not detain you with these matters, but I feel that admissions, damaging admissions, are often made by men whose whole hearts are in the truth, simply out of compliment and courtesy. That is giving up the outwork, and if we do that the enemy will soon be thundering at the citadel. Now I know the citadel can never be taken—I am perfectly satisfied of that; but at the same time I do not see why we should give our enemies even the choice of weapons by admitting too much. I will not give up at any one point except where I am compelled to do so, and I do not think that I need do so at any of the points now before us. I do not deny the dictum of the scientific men who tell us that we know nothing of this table, but that is not a denial of its existence as matter. I know what Berkeley said of matter, and what Johnson said of Berkeley; and Samuel Taylor Coleridge, one of the greatest of English thinkers, notwithstanding his *Confessions of an Enquiring Spirit*, has said that the Berkeleian theory must be admitted if you grant the premises, for the chain of reasoning is a chain of adamant. No doubt that is so; but you must first grant the premises, which I for one will not do. On the contrary, I agree with Lord Byron, who said, "If Berkeley says there is no such thing as matter, then it's no matter what he says." (Laughter.) Adam Smith's servant complained of a pain in his back. The philosopher said, "Are you quite certain? The pain is not in your back, it is in your mind;" whereupon the man replied, "I shall be obliged to you if you will take it out of my back and put it into my mind." (Laughter.) The gentleman, if I may use the term, who took a principal part in the discussion which led to the writing of Mr. Reddie's paper (Mr. Nicholls) asked for a proof of the existence of the Deity which should be a proof like the existence of the glass he held in his hand, which he could see and touch. But I say he only asked for an imaginary proof: he could not see it because he could not with material eyes see an immaterial idea. When you cut your finger you have material evidence of the consequence of pain, but can you see the pain itself? The fact is that there are some men who never know when they are beaten, and they will not admit anything in relation to the truths of theology which militates against their dogmas, for they are only theories and not principles upon which they base their views. They do not rely upon principles, or you would have the same principles from age to age, and when they have propounded a dogma they put it forward as a thing capable of mathematical proof. Here I hope Mr. Titcomb will allow me to differ from him without giving me occasion to repent my temerity. I understood him to say that apart from Revelation he thought we could have no proof of the existence of a God which would bring with it a certainty equivalent to mathematical

certainty. Stated in those terms I will not controvert it, but I think that there may be persons present who might go away with an impression different from that which Mr. Titcomb really meant his words to convey, and therefore I should like to say one word on the point. I do not pretend to say that apart from Revelation you could have proof which should be of a mathematical kind, but I do say that whatever be your certainty arising from mathematical proof, it appears to me that you can have a proof which shall include as much of certainty as to the existence of God on other grounds quite apart from Revelation. (Hear, hear.) I would not make a statement like that if it were not that I have the words of an inspired Apostle as my warrant. He would not perhaps count for much against those who are opposed to us, but I quote him here where I am sure he will count for something. He says that people without a written Revelation were inexcusable, because the invisible attributes of an invisible Being are yet manifested so explicitly and tangibly in the things He has made that we cannot fail to recognise His powers and His Godhead. No doubt you never can show man God's face and let him know Him without revelation; but you are inexcusable if you think you can be left in doubt as to His existence, power, or Godhead. Mr. Titcomb went on to speak of a piece of sandstone. He did not limit the condition of that sandstone, but I do not know whether our opponents will admit that it must always have been a piece of inorganic matter. Mr. Titcomb went on to say that probably it had undergone a great many transformations, and possibly some of those changes might have involved an organic condition for it. But I will not go back to that. I know something of the Darwinian theory, and I know Darwin confesses that the proofs from the domain of geology which he would like to see have not yet arrived, so that much of his theory, instead of being on *terra firma*, is entirely *in nubibus*. He has obtained no geological specimens bridging over the vast chasms in his system. He says these connecting links may yet be found, but when they are will be the proper time for dealing with them. Let us, however, admit that they may be found some day: what will be the result? It is said that men have been derived from apes; but all the apes of which we have any knowledge are essentially and entirely different from men—so far different that all the apes which have ever existed would fail to achieve what the men in our own age alone have achieved. But if all the animals inferior to man were brought together on one side and man himself on the other, there would still be an impassable barrier between them. If you could show me an ape and a man so much alike as to have no physical distinctions whatever between them, I would still deny your conclusion, and remind you of the observation of the French surgeon, that "he had never had a soul under his scalpel." (Cheers.) As to the question of matter and mind, there is one set of scientific men led by Professor Huxley, who allege that there is no mind as distinct from matter, and that protoplasm is at the root of every phenomenon of mind as well as of matter. Granting the ape theory, there must have been a time when the first man developed from the ape stood erect, looked up to God, and had a thought of God, and possessed a mind

and a capacity for worship. Now the introduction of that first man with those faculties so different from those of every previous ape made him a different being. Some of these scientific gentlemen take up fossils and say, "We know such things have happened because we have existing attestations of the fact;" but I say there is something which man has which no ape has ever had, the idea of God; and, with Coleridge, I ask, How did the atheist get his idea of that God whose existence he denies? A man may deny it till doomsday, but he cannot account for the fact that the idea is possessed by all men. Assertions have been made that some men have been known to be bereft of that idea, but if that is so the very exception would prove the rule that all men have an instinctive idea of God and an idea of infinity, although the wonderful thing is that they are not capable of fully grasping either truth.

MR. REDDIE.—It is a misfortune that you have not read the paper. Your words, though very interesting, are really thrown away. Let me quote one sentence from Bishop Berkeley which I have given in my paper:—

"I do not argue against the existence of any one thing that we can apprehend either by sense or reflection."

I have shown where Berkeley's view is not tenable.

MR. WAINWRIGHT.—Well, I only wished as briefly as I could to draw attention to the fact that we have proofs of the existence of God, although I cannot say that they are mathematical proofs, but they are none the less real for all that.

THE CHAIRMAN.—The question seems to me to narrow itself to as small a point as possible in the following: Can we find any argument from nature to meet those who deny design? If Darwin, for instance, denies design, the best way for us to act is not to bring forward an abundance of argument which will be satisfactory to ourselves, but when we come to Darwin and others who simply say, "We believe these things have come through evolution or development without design," our best course is to endeavour to trace out how that idea has originated in their minds, in order that we may the more effectually try and meet it, as it were, on their own grounds. The idea of natural selection, no doubt, first arose from the breeding and cultivating of animals and plants. It is well known that by careful selection among animals and plants you may produce results differing very much from the originals. Darwin gives the example of pigeons, and says that the original rock pigeons seem to have so far disappeared that scientific ornithologists would at once pronounce many of their present descendants to be of distinct genera. Well, the idea of evolution thus gained from that and other stocks Mr. Darwin applies to all nature, and assumes that there is a great and independent power of natural selection, and that all creation has been evolved gradually by law, but without design. Here we join issue. If the Deity is to be excluded at all, He must be excluded from everything; but we cannot help asking, how is the instinct implanted in the bee to make his cell in the manner in which he does make it, unless it be by design?

You find, in short, that you cannot support the Darwinian theory as it stands without doing violence to your own mental processes. I quite admit that *I myself believe thoroughly in the principle of evolution*, but then I do not exclude the principle of a Deity from it. How evolution has gone on I cannot say, but creation as we find it has been most undoubtedly developed in some way or other. If you study geology you *must* come to that conclusion ; but as in the case of the human eye, my mind refuses to deny the Designer. The question is, how the two points can best be reconciled. I cannot do it except by believing that the Deity in some way works wholly by means of laws impressed on matter, but which laws, nevertheless, produce those results we call "designed." The word "design," however, is scarcely the word we should use, although unfortunately we have no better expression. A watchmaker in making a watch simply puts his materials together, but the Deity does much more than that, and I cannot exclude the idea of the Creator behind everything. Paley, in giving the illustration of the watch, alludes to this, but still he does not go very far. He says : " You admit a designer, but if the watch produced another watch like itself would not that enhance your idea of the designer ?" Certainly it would, but Paley stops there. Now I would go still further, and say, Would not your idea of the designer be enhanced to a much greater extent if every watch and clock in the world, in all their wide diversity of shape and size and internal arrangement, had been evolved from one simple watch ? That would make the wonder infinitely greater, and yet it only brings us to the state of things which we find in nature. But Darwin says this is all brought about by chance. Now I should like some astute mathematician to calculate this matter of chance, and I am sure he would soon show the utter impossibility of the various correlations of growth which Mr. Row has referred to, all operating together to produce such perfect beings as we see simply by chance. The very perfection of all these arrangements is to me abundant evidence of a Designer. *The doctrine of chance is the great crux of this theory.* If that fails you must have some other doctrine, and you cannot accept any other except the principle of a Deity. I do not know how you can meet Darwin and his followers except by proving the utter impossibility of chance, and not some overruling power, having a hand in the matter. That is the only argument we can hold against them. It always seems to me useless to bring forward arguments from design. No doubt such arguments are very satisfactory to ourselves, but they are utterly thrown away against Mr. Darwin and those who think with him. (Cheers.)

MR. REDDIE.—There is one thing which I may claim credit for, and that is the desire not to have a public discussion with Mr. Bradlaugh without a printed paper. When there is no printed paper, there is generally a host of questions raised in discussion which do not touch the subject at all. Even as it is, we have had Mr. Row, who is generally so shrewd a critic, so far wrong as to attribute to me the notion that the existence of this table is entirely ideal. Now you will find nothing whatever of that kind in my paper ; and in reference to what fell from Mr. Wainwright, I have already shown that to a certain extent he was only demolishing a man of straw

(laughter) ; and as all that will appear in our *Journal of Transactions*, I will not elaborate it further. Mr. Row's remarks in reference to the lachrymal duct and the evidences of design in the channel cut from the Alban Lake, are very valuable ; but in my paper you will find it stated that the argument from design is only useful to those who admit design, and is therefore useless against those who oppose design. I have tried to take the argument on a lower ground. Instead of Paley's watch, I have taken the case of an inorganic piece of matter like a stone, and argued that as you cannot attribute its tendency downwards to itself, you must attribute it to some power analogous to that of our throwing a stone and making it move in a particular direction. As to what fell from Mr. Titcomb, I am sorry he was obliged to go away at an early period of the evening, but I told him before he went that I should notice one of his observations with which I could not agree, and which I am sure he will not maintain when he comes to reconsider it. I refer to his observation as to the necessary existence not of the Deity merely, but of the world with all that it contains. He quite admits with me that while the necessity for the existence of an eternal being is tenable, you cannot logically maintain the existence of more than one, and still less of a congeries of eternal principles all contradictory to one another, such as good and evil, matter and mind. I have Mr. Titcomb's own authority for saying you cannot defend that. One must be eternal, and one only. Then I quite agree with what Mr. Wainwright said, and I disagree with what Mr. Titcomb said as to mathematical proof of the existence of the Deity. Of course the proof is not mathematical, but it is quite as strong as any mathematical proof whatever ; and if Mr. Wainwright had only read the paper as he usually does, he would have found that I took up the position which Mr. Nichols, my disputant, required and really disposed of it. I think we might have been spared some of the arguments upon Darwinism, which really did not arise out of my paper at all ; but as to what fell from Mr. Brooke with reference to rarefaction, I am always ready to acknowledge it when I am wrong, and I admit that on this point I fell into a blunder which I am obliged to him for having exposed. I knew, of course, that as the weather gets cold it does condense and make our humid air the reverse of rarefied ; but I always understood that in the dry regions of the air and near the poles air was rarefied by cold. But I suppose that view is only a popular error. As to the term "attraction of cohesion," I was not criticising the term from a scientific point of view, but only pointing out that those phrases did not throw much light on the question here argued about the immateriality of all those substances. When Mr. Brooke reads the argument again, I think he will find I am referring to our ideas on the subject. I had no intention of disputing the propriety of the term, and I have pointed out, in using the argument elsewhere, an illustration of the attraction of cohesion which is a very forcible one, by putting two smooth plates of glass together when you have an enormous attraction produced by the attraction of cohesion. I do not know any better experiment, but still I do not think it enlightens us very much. I quite agree with Mr. Wainwright as to not making conces-

sions to our opponents, and I only regret that he should have forgotten his own principle when he made the important concession as to getting a man out of a monkey. When the missing link comes, I shall be prepared to argue the matter, but until then I am as averse to Mr. Wainwright's concession as to any other. (Cheers.)

Mr. WAINWRIGHT.—Only one word. Nothing was further from my ideas than to make such a concession. I only supposed a case for a moment in order to show that it would not bear examination.

The Meeting was then adjourned.

ORDINARY MEETING, 21ST MARCH, 1870.

THE REV. WALTER MITCHELL, M.A., VICE-PRESIDENT, IN THE CHAIR.

The Minutes of the last Meeting were read and confirmed.

The following elections were announced :—

MEMBERS—W. W. Hitchman, Esq., M.D., of Liverpool.
T. Wilkinson, Esq., M.D., of Brixton.

Also, the following presentation of a work to the Library :—

“The Week of Creation ; or, the Cosmogony of Genesis considered in its Relation to Modern Science.” By G. Warrington, Esq.
From the Author.

The following paper was then read by the Author :—

ON GEOLOGICAL PROOFS OF DIVINE ACTION.

By S. R. PATTISON, ESQ., F.G.S.

THE changes which matter forming the earth's strata has undergone, or is undergoing, may operate either in cycles of perpetual recurrence or by continual progression. The latter, again, may be either progressive by way of evolution,—*i.e.* by virtue of inherent property,—or by simple progression in a series of independent changes. In all cases it is government by law ; the idea of a Divine Creator and Upholder may equally underlie either hypothesis.

2. The proposition which I shall seek to establish is, that the condition and disposition of the strata disprove the theory of perpetual recurrence or uniformitarianism, and support the theory of serial progression. The latter may well be styled evolution, if by this term is only meant the unfolding of phenomena connected by a common plan ; but not if it is intended to express that every state contains the causation of its successor.

3. Another idea is also frequently ranked as a theory,—that of catastrophe. This affirms that the strata have been produced by operations similar to the present, but immeasurably more

violent and sudden. Geology shows proofs of great catastrophe too strong to be underrated, and of slow operations too plain to be overlooked. Both are true descriptions of different portions of the same great field: the manner in which each has operated is the story which this science has to tell.

4. Uniformitarianism dispenses with the idea of God as much as it is possible to do, without ignoring Him altogether. Yet it is but fair to say, that Sir Charles Lyell, the eloquent expounder and philosopher of this theory, admits all that we can ask when he says, "In whatever direction we pursue our researches, whether in time or space, we discover everywhere the clear proofs of a Creative Intelligence, and of His foresight, wisdom, and power."* The opinions of the evolutionists respecting the place of a divine power and providence in their theory, are not quite so satisfactory. Kant's dogma, recently brought into the place of honour by Professor Huxley,† is, that the universe was once an infinite expansion of formless matter; at one point a single centre of attraction is set up (*how* does not appear, and this is the fatal weakness in the foundation), and hence all things are developed in time, and in time again unmade, by the determination of heat-force driving them away from the centre; and so worlds are made. Professor Huxley thus describes the theory in 1869:—"It applies the same method to the living and the not-living world, and embraces in one stupendous analogy the growth of a solar system from molecular chaos; the shaping of the earth from the nebulous cubhood of its youth, through innumerable changes and immeasurable ages to its present form; and the development of a living being from the shapeless mass of protoplasm we term a germ."‡

5. The *Edinburgh Review* of January last adopts and applauds the theory thus enunciated; and the Professor, in his second annual address, in February last, confirms and extends his former statements. He recalls an opinion which he had expressed in 1862, against the progressive modification of animal forms, and proceeds to reason that there is "a clear balance in favour of the doctrine of the evolution of living forms one from another." §

6. The evolutionists say,—Given force and matter, the results must be what they have been and are. Granted, if a third term is added,—a beginning. We can only know the law of succession by the fact of observed changes. We cannot penetrate to the ultimate causation; but by establishing the necessity

* *Principles*, vol. ii. p. 613.

† Address to the Geological Society, Anniversary, 1869.

‡ Address, p. 47.

§ *Nature*, report corrected by Professor Huxley.

for a beginning we prove the fact of ultimate causation. This being so, I am at liberty to assert that progress by law implies a lawgiver; and thus there is let in the whole doctrine of final causes which has been so abundantly stated and illustrated, but which is conspicuously absent from the propositions of the evolutionists.

7. I do not seek to meddle with life-force or any of its problems, but confine my argument to the physical phenomena of the strata. I shall endeavour to show a change of state in a given direction, not from necessity springing from any attribute of matter, but from the guidance of law; as Hooker says, "Those things which Nature is said to do are by divine art performed, using Nature as an instrument; nor is there any such art or knowledge divine in Nature herself working, but in the guide of Nature's work." *

8. The conclusions so firmly established by geologists, that there is a definite succession in strata, and that throughout all there has been no change in the law or system, have become axioms of science, and have passed into common thought and speech. The circumstance that many of the great changes in this succession are merely the sum of a multitude of minute changes, does not affect the question, whilst the fact of change remains. The thin clay-bed superimposed on a layer of rock-salt is not derived from or through the latter; they have no connection with each other, save as being the results of one system of law. There is no evolution in the sense in which it is said that one animal form has been evolved from another with the slightest possible variation between them. The physical work done in the ages is displayed in methods which we should call fitful and irregular, did we not believe that it is regulated by uniform law working from beyond our ken.

9. I propose to glance at some general cosmical considerations, and then to review, first, some of the minerals, and next, some of the rocks, in order to ascertain their testimony concerning the rival theories.

GENERAL COSMICAL CONSIDERATIONS.

10. Two processes are going on which, if continued, must bring the solar system to an end. First, the gradual cooling of the sun by the excess of heat given out over that returned; secondly, by the approach of the earth towards the sun. Although neither of these causes can operate any sensible change for a million of years, yet they suffice to displace the theory of endless duration. The limit of the earth's duration

* Book i.

is fixed by Sir W. Thomson at 300 millions of years by refrigeration; at 500 millions of years by the calculated age of solar heat; and at 100 millions of years by the retardation of the earth's orbit.

11. The first-named cause may be considered to be properly within the limits of geological inquiry. The actual composition of the earliest sedimentary rocks, derived from the disintegration of igneous products, and the outbursts of molten rock in all periods of the earth's history, point to a primitive molten condition of the globe. The state of the deposits proves that as the earth became cool it occasioned precipitation of water on a large scale. There is no trace of any repetition of these phenomena. The present state of things is not the result of an everlasting play of forces between the heat of the earth and the condition of the atmosphere, but of a law operating to produce further progress. The effect of modern volcanic action, though tending in the direction of restoring the wasting and levelling processes of meteoric causes, is yet only a residual phenomenon of that which was once so potent. It is now a tiny force compared with the power exerted by air and water.

12. The action of the carbonic acid of the atmosphere on the present crust of the earth is slowly to decompose and disintegrate the latter, leaving it a ready prey to the mechanical forces of denudation. Chemists assure us that this is but a feeble representation of the greater power which arose from the greater volume of carbonic acid during the early history of the earth; that all the carbonic acid, all the chlorine, all the sulphur, once existed in the atmosphere,—a state of things towards which there is certainly no proof of any tendency to recur.*

13. If all the force of the solar system is gradually becoming changed into heat, and if some of that heat remains on the earth's surface not reconverted into force, things must come to an end. All differences of temperature at the earth's surface will ultimately be merged in universal heat. The conclusion may be stated in the language of Adolf Fick :—

“We are come to this alternative: either in our highest, our most general, our most fundamental scientific abstractions, some great point has been overlooked; or the universe will have an end and must have had a beginning; could not have existed from Eternity, but must at some date not infinitely distant have arisen from something not forming part of the chain of natural causes, *i.e.* must have been *created*.”

14. If progress in the physical world is admitted, I do not see how the notion of a beginning, and of a Creator, can be avoided.

* See Sterry Hunt's Lecture at Royal Institution, May 31st, 1867.

Time has not failed, and if progress has been going on from eternity, why is not the cycle completed? If we are still going on, there must be order, and order implies government. Progress must be measured by time; measurement is a rule, and thus we are brought to the old argument from design. True, we cannot explain why force is not an attribute of matter, nor why the origin and direction of force implies mind; but we have at least as good a right to our theory of design, and to say that it accords with our moral convictions, as any one can have to say that the contrary is in the constitution of things, though not further explicable.

MINERALOGICAL INSTANCES.

15. We will next allude to the mode of occurrence of a few of the predominant minerals occurring in the composition of rocks.

16. *Quartz*.—The actual development of this substance has always been either by deposit from water holding it in solution, by crystallization, by organic agency separating it in water, or by deposit from heated vapour. These modes have all been in operation from the first. The crystalline rocks contain silica in distinct crystals or grains; the sandstone rocks hold it in pounded fragments; the chalk displays it around foreign bodies [or in layers from precipitation or deposit; volcanic springs and mineral veins show it as resulting from heated water or steam. It abounds in the ancient rocks in a chemical form, and in modern rocks in a mechanical form. The modern deposit from springs and water is wholly inconsiderable; it is removed from the soil by the plants at a rate which, according to Bischoff, would in 78,705 years yield a foot in thickness over the surface of the earth. Nowhere is it being elaborated in the same fashion or degree as is manifested in the older strata.

17. Certain minerals are characteristic of particular periods of geological time. Thus glauconite, a silicate of magnesia, is formed on foraminifera, in the lower cretaceous system, more abundantly than elsewhere. Wavellite, a hydro-phosphate, occurs in the Devonian grits in a similar manner; and so of numerous other minerals.

18. *Limestone*, a crystalline or compact precipitate from water, or formed by organic processes, is one of the most notable constituents of rocks. It exhibits great variation in the order and mode of its occurrence.

19. *Pyrites*, which occurs in all formations, is specially abundant in the older rocks. Pyrites may be produced by treating rust of iron slowly with sulphur, but no manufactory in the deposits now in course of formation is known to us which could produce

the large thick layers held by the ancient rocks. The operation of evolution ceases on the formation of the mineral in its present condition. It is made, and then with other products preserved for use in the bosom of the earth without further change.

20. *Lava*, a product of modern volcanoes, depends for its composition on the rocks which were fused for its production. It is not a recurrence of ancient greenstone, of which it is probably the representative in place, but not in time.

21. *Iron-ore* is being daily deposited, in the shape of bog-ore, beneath thin coverings of moss or mud. It is usually found in irregular beds or lumps on the hill-sides and in marshes, and in grains in the beds of lakes. It is a deposit from water holding iron, precipitated by carbonic acid derived usually from vegetation. It is of similar structure to the great deposits of iron-ore imbedded in the coal-measures. The latter are, however, immeasurably larger than the former. Bog-iron ore does not, except in very few cases, increase in thickness beyond a few inches or feet. Subsequently to the oolitic age the additions of oxide of iron to strata have not been on the same extensive scale as before. Cycles of ages have occurred, but there has been nothing in the deposition of iron ores since the times of the oldest sedimentary rocks, which can be properly termed recurrent.

22. With regard to metallic minerals in lodes or veins, whether deposited by the wet way, *i.e.* from water traversing the solid rock, carrying the metals, and depositing them in fissures; or, in the dry way, by sublimation from heated vapour; both these ways may go on now: the one throughout the mineral kingdom, the other in the neighbourhood of volcanoes. But, as matter of fact, the results of mineralization attributable to modern operations are extremely small compared with the ancient exhibitions. So, too, there have been in all geological ages some deposits of metallic minerals; but the palæozoic epoch was the chief time of the display of this kind of action. The work may be now going on, but it is impossible to overlook the difference. The rocks are now as capable of being permeated by heated vapour, and the fissures are still open to the effects of sublimation; but we see no mineral veins in course of formation to be compared with the lodes of the old rocks.

23. The whole evidence from minerals appears to dispose of recurrence, and to denote simple progression by one prevalent system of law—evolutionary by virtue of force, its factor. We cannot, in the phenomena, find the ultimate origin of force, just as in the parallel vital series we cannot find the origin of life. We are therefore at liberty to adopt our own theory, derived from another record, without any fear of a demonstration to the contrary.

24. Viewing the action as divine, we may describe it in the language of Professor Fairbairn : "There is here what is incalculably more and better than some occasional proofs of interference or fitful displays of power, however grand and imposing. There is clear-sighted, far-reaching thought ; nicely-planned design ; mutual adaptations, infinitely varied, of part to part ; the action and reaction of countless forces, working with an energy that baffles all conception, yet working with the most minute mathematical precision, and with the effect of producing both the most harmonious operations and the most diversified, gigantic, and beneficent results."*

CRYSTALLINE ROCKS.

25. Viewing these and their allied effects as a whole, the following progression may be observed :—first, granitic rocks ; secondly, greenstone penetrating the former ; thirdly, deposits in veins by hydro-thermal action ; fourthly, modern volcanoes and thermal springs. These phenomena point to a common origin ; they are the results, it may be, of one force, but they are neither recurrent nor evolutionary. Granite differs from greenstone, and both differ from lava ; they belong to different epochs. Granite rocks exist in every quarter of the globe ; the bulk of them are more ancient than the coal-measures. Greenstone, though it may have originated in a still lower stratum, is of newer development. Lava is still more modern, and has notably a less quantity of silica than either. No modern instance of an outburst of either of the former is recorded. The preponderance of silica in granite renders it constantly different from greenstone. Besides this variation in composition, there is an enormous difference in the relative development of either, as any geological map will show. The extensive spread of the granite rocks, and the frequent occurrence of veins and bosses of greenstone, at particular epochs before the secondary epoch, has no parallel whatever in the feebleness of the tertiary and modern periods.

26. The metamorphic rocks point to the same conclusions. The bulk of these lie below the Silurians. Metamorphism has been diminishing in the upward course of the formations. The most terrible volcanic action of modern days is but as summer lightning compared with the grandeur and duration of the fiery effects written in the beds of Snowdon. Mr. Hopkins has shown that the present condition of the globe, as regards heat, is not permanent ; that it does not belong to an infinite

* Fairbairn, *Revelation of Law in Scripture*, p. 7.

series of things.* If the facts forbid the supposition that, either by the internal heat, or by the accession of stellar heat, the temperature could be kept the same for an indefinitely long space of time, then it follows that metamorphism of rocks by heat cannot have gone on for an indefinite length of time. It must have had a beginning, it must be tending towards an end. If all things continue as at present, the denudation of continents not balanced by the decreasing terrestrial heat-effects, the result will be that all the land will be swept into the sea. But the earth and the solar system may move amidst other laws of which we know little or nothing; all that we see may, for aught we know, be modified at any moment by an unsuspected expression of highest law, saying, "Thus far shalt thou go and no farther!"

SEDIMENTARY ROCKS.

27. The lowest rocks with which we are acquainted, omitting igneous substances, are the coarse hard rocks now called the *Laurentian*. They are, like granite, characterized by excess of silica. They consist of gneiss, mica-schist, hornblende-rock, quartz-rock, felspar, and limestone. They are in Canada 30,000 feet thick, and are found in various parts of the world. They are the most ancient of the rocks with laminated structure, and were, until lately, termed primitive. As a series they are wholly unlike any other. The quartz rocks of the lower Laurentian formed a base, on which was deposited the thick limestone containing the earliest organic form hitherto found, the *Eozoon Canadense*. The uppermost beds contain fragments of the inferior ones, broken off, rolled, and imbedded by external force.

28. The next formation in the ascending scale is the *Cambrian*, with which, for our present purpose, may be classed the overlying *Silurian* and *Devonian*, forming together a vast series, at least 70,000 feet thick, differing greatly in its composition from the Laurentian by, amongst other peculiarities, the presence of a larger quantity of alumina and less of silica. This difference has furnished the materials for the development of slaty cleavage. Cleavage is not wholly absent from the rocks below, nor from certain rocks immediately above, but it has its chief home amidst these Cambrian, Silurian, and Devonian

* "With respect to inorganic matter, the theories of uniformity and non-progression appear to me incompatible with our most certain knowledge of the properties of heat,—that ever-active agent in the work of terrestrial transformation."—*Anniversary Address to the Geological Society*, 1852. See also Hopkins on Change of Climate, *Quarterly Journal of Geological Society*, vol. viii. p. 56; and *Cambridge Essays*, p. 215.

strata. We do not find it characterizing more modern rocks of analogous composition or condition. The existence of enormous deposits of rock, containing three-fifths silica and one-fifth alumina, exhibiting true slaty structure, is peculiar to this age of the geological scale. Such rocks are found extending over a large portion of the area of the land on the globe. The same composition and structure have been ascertained to exist in rocks of the same geological epoch right across both hemispheres, and well-nigh from pole to pole.

29. The *Carboniferous* system is distinguished by the vast amount of carbon, in the form of coal, accumulated in its layers. The condition of things in regard to the growth of the vegetation whence the coal was derived was similar to the present. The sunshine and rain, winter and summer, river and lake, have all written their annals in the coal-beds. But there was a different distribution of land and water, and of terrestrial temperature, for we find traces of sub-tropical vegetation in the coal-shales of the Arctic regions. Though coal has been formed both before and after the carboniferous and oolitic epochs, yet in the former was its principal development. Looking at the enormous development at this epoch of forest and swamp, composed of nearly identical vegetation in all parts of the world, we have only to remark that there has been nothing like it since, and that all subsequent formations have shown wider and wider divergences from the carboniferous type.*

30. Doubtless there have been loose statements erroneously made concerning the complete universality of ancient deposits. But, allowing for this, it cannot be denied that the crystalline schists, slate rocks, Devonians, and carboniferous strata, were spread on both sides of the equator, and around the globe more uniformly than can be paralleled since.†

31. Formations apparently similar may not have been strictly contemporaneous, and dissimilar formations may have been so. Along the same line of river or coast there is being deposited at the same time gravel in one place, sand in another, mud in a third, all dependent on the amount of force in the stream and the nature of the banks or coast. Identity in composition is not

* "No coal-fields, to last even a single century, are now growing at the mouths of our rivers; no metallic veins are spreading through the rocks that we can explore; no great catastrophe breaks down the barriers of seas, or opens picturesque glens through the ridges of the mountains."—Phillipps, *Origin of Life*, p. 166.

† "As a rule, the older the rock is in the history of the world, the greater will be the area over which its chemical composition and character remain unaltered."—Haughton, *Manual*, p. 88.

proof of synchrony in time. There is nothing to distinguish lithologically a grit of the slate rocks from one of the coal series, or even from a tertiary. There is, however, nothing in all this to invalidate the conclusions to which, partly from stratigraphy, partly from organic contents, and partly from structure and composition, geologists have uniformly arrived, that the great rock formations are wholly different from each other, and that this difference is not one of recurrence, but that each forms a step in a true progression.

32. From the specialities of the *Triassic* system, the New Red-sandstone, I single out one, viz., the prevalence of rock-salt. This is a marine deposit, and occurs sparingly in rocks of all ages, but in excess in these red rocks, whence it is obtained for economic use. The saliferous strata are often subjected to the action of springs, which dissolve the salt and bring it up for use. The deposits underwent dislocation and denudation. The same sea-water, before parting with its salt, had parted with its sulphate of lime (gypsum), and this action took place with many successive quantities of water over the same area; afterwards a change of conditions occurred, and the deposit became covered with clay, stored, as it were, for future use. A similar process is going on now in the great salt lake, the Dead Sea, and other lakes holding concentrated solutions. They receive the slightly saline waters of rivers, and the latter become concentrated by evaporation.

33. The *Jurassic* system, composed of frequent alternations of clay, sandstone, and limestone, may be likened to a portion of the present earth and ocean in the vicinity of the Torres Straits. The similarity is increased by the slight subsidence of some portions of that coral sea. But here the comparison ends. The oolitic period was ushered in by the upheaval of the Jura range, and closed by that of the slopes of the Côte d'Or; in the interval there were frequent sudden changes of material, as from the clean sand of the coral rag, to the thick and wholly different Oxford clay; and entire changes of condition, as from marine beds of the lower oolite, to the freshwater and land surfaces above, and then a descent again into the sea; and again, an elevation for the growth of terrestrial plants, and so on. An examination of the Yorkshire coast, the observer realizing the fact that all the successive beds were either sea-bottoms or land-surfaces, will serve to disperse all idea that the present is a mere recurrence of the past. The various and dissimilar beds of the oolite, though denoting immensely long periods for their formation, point to the evolution of some causation not involved in the visible phenomena, but apart from them. The arguments of those who would persist in looking for causation in the rocks, remind us

of Zeno's reasoning, ridiculed by Cicero: "If well-tuned pipes are formed out of the olive-tree, is it to be doubted that there is an innate skill of piping in the olive-tree itself?" *

34. *Chalk*.—The ooze at the bottom of the Atlantic, as examined by the nautical explorers in 1858, and by the dredging expedition in 1869, contains a multitude of foraminiferous creatures (globigerinæ) mingled with fragments of diatoms and sponges. This occurs more especially in the course of warm currents. These are interspersed with colder spaces floored with sand, and less marked by organic life. These deposits are analogous alike to the chalk and to older shales and sediments. They are the present representatives of beds common in the geological periods, and specially manifested in the white chalk. The latter is found in borings at great depths, and also at heights 10,000 feet above the present sea-level. The Atlantic formation is increasing at a rate hardly appreciable; it is undergoing drifting and re-sorting by change of currents; thus bringing it into analogy with the old deposits. But the amount of fine calcareous sediment of one description, accumulated and spread out in the upper chalk formation, upwards of 1,000 feet thick, extending from Sweden to Spain, and from Ireland to the Black Sea, is so enormously in excess of any modern operation, that the latter cannot be considered as a return to the cretaceous cycle, but merely as an instance of the feebler action of similar causes. If the Atlantic sea-bed were so deep as to afford space for the accumulation of 1,000 feet of foraminiferous marl, and if the whole were then lifted up with the sands, clays, and gravels of the base to form a land-surface, and then again lowered so deep as to form a bed for the tertiary marine formations,—that is to say, if something quite imaginable but not at all observed, were to occur, then the conclusion would be correct that chalk was recurrent or continuous. The Atlantic ooze certainly forms imperfect oolite and imperfect chalk, just as bog-iron forms imperfect iron-bands, and peat imperfect coal-beds; but it is obvious that the chalk will continue to maintain its title to be considered as the leading product at one period, just as the others were the characteristic products at other stages of the great progress.

35. The *Tertiary* formations might be supposed to yield the most obvious proofs of recurrence or evolution, if either of these is a true theory. Yet when we examine them ever so slightly we are led to opposite conclusions. Consider the tertiaries underneath London. We have first an estuary deposit of pale-coloured sands and clays called the Woolwich beds,

* Cicero, *De Natura Deorum*, book ii.

and overlying it a deep-sea formation of dense dark clay, capped after a long interval by clean bright sands. The materials of these beds are of course quite different, the proportion of iron and the condition of the iron different in each, each was not derived from its immediate predecessor, but from the disintegration of other rocks. The forces employed were, of course, analogous to all forces displayed before and since; but the phenomena are connected only by a law which embraces the whole of the diverse operations and effects.

36. The lesson from the tertiary rocks is, that species of rock and rock-formations, go on increasing with the age of the earth. There is no mark of a return to the simpler and fewer deposits of eozoic date. Cotta says, "they have been increasing continually ever since the first solidification of the earth's crust."*

37. We have thus hastily reviewed formations extending through eighteen miles of thickness, as developed at one place or another on the earth's surface. They afford the strongest presumption against the theory of recurrence in a cycle. The force of the argument in question, and the nature of the evidence for progression by a law more deeply seated than the phenomena, is expressed in the variety of the great natural successions into which the whole series is divided by characteristic differences.† We take the table from Professor Haughton:—

							Thickness in feet.
Eozoic	...	...	...	...	...	...	26,000
Lower Silurian	...	...	...	...	...	...	25,000
Upper Silurian	...	...	...	...	...	...	5,500
Devonian	...	...	...	...	...	...	9,150
Carboniferous	...	...	...	...	...	...	14,600
Permian	...	...	...	...	...	...	3,000
Triassic	...	...	...	...	...	...	2,200
Jurassic	...	...	...	...	...	...	4,590
Cretaceous	...	...	...	...	...	...	11,213
Tertiary	...	...	...	...	...	...	9,000

* Cotta, *Rocks*, p. 395.

† The argument against uniformitarianism was long ago admirably epitomized by the insight and mental force of Professor Sedgwick, thus: "If the principles I am combating be true, the earth's surface ought to present an indefinite succession of similar phenomena. But as far as I have consulted the book of nature, I would invert the negative in this proposition, and affirm that the earth's surface presents a definite succession of dissimilar phenomena."—*Anniversary Address*, Feb. 1831.

38. In the present inquiry we have only for our guide the actual constitution of things. It may therefore be urged, looking at this alone, that succession is a necessary result of matter and force. But a consideration of the various facts above referred to may certainly allow, and probably does encourage, our concluding, with at least equal plausibility, that things might have been otherwise. Evolution may be a necessary product of matter and force; but evolution *in a particular direction* is not, or may not be, a necessity. The variety of the changes indicated in the table, look as if the ultimate determining force was not *necessity* of any kind.

EARTH MOVEMENTS.

39. Mountain-chains are elevations of portions of the earth's crust, occasioned by lateral pressure springing from contraction of the nucleus. This elevation has taken place during all epochs of the geological succession save the present. We must presume either that the rate of cooling no longer produces contraction, or that its force is exhausted elsewhere than at the surface. The modern phenomena which represent the ancient upraising of the strata are too minute for comparison. Since the tertiary there are no marks of extensive dislocations.

40. In like manner denudation has removed enormous masses of all the ancient formations, sometimes planing off thousands of miles of deposits. The older denudations are more wide and deep than the more modern. There are proofs (according to Professor Ramsay*) of the intervention of a vast lapse of time, during which this destructive work went on, between the fundamental Laurentian gneiss of Scotland and the overlying Cambrian slates; of a second interval between the latter and the Lingula flags; and so between these and the Tremadoc slates; between the last and the Llandello rocks; again, before we come to the Llandovery, and before we come to the Wenlock; and so down through the geological scale these dark spaces are repeated. Ten such physical breaks are enumerated, and many more might be named. These, though they occur in a series, yet are so diverse in their duration, extent, and power, so obviously unconnected with anything in the structure of the strata themselves, that we must attribute their occurrence to some appointment of which we see the effects but cannot discern the cause. They are not the products of matter and time conjointly; for, as the Duke of Argyll pithily observes, "Time does nothing by itself except by the aid of its great ally Force."†

* *Quarterly Journal of the Geological Society*, May, 1863.

† *Quarterly Journal of the Geological Society*, vol. xxiv. p. 272.

41. The question is not whether volcanic force similar to that now in operation, and rain and rivers on the present scale, are sufficient to produce the phenomena referred to; but whether, on the whole, the evidence is that they have actually done so or not.

42. The insensible rising of the land, stated to be going on along the line of the Andes, and on the Pampas, and in Scandinavia, and the depressions now occurring in Greenland and other places, may be effects flowing from the same causes which raised the existing mountain-chains. But when we consider that sedimentary deposits have been actually tilted and raised up in the Alps 8,000 feet, in the Andes 14,000 feet, and in the Himalayas 16,000 feet, by action frequently violent and sudden, we fail to find in the one occurrence anything but the slightest similarity to the other.

43. The work of earthquakes is a parallel case. It is doubtless of the same nature as the crust-disturbances of ancient days. But who, after examining any old trappean district, such as North Wales, would think of comparing the modern effects, in magnitude, with the ancient. We admit Sir Charles Lyell's statement that there has been no interruption in the continued action of change from the remotest period, but the vast differences in the amount of action displayed constitute a real discrepancy. The oscillations of the surface which have left their bench-marks on the strand of geological time were quicker and more intense in proportion to their high antiquity. The strongest instances of modern action are those which probably had their commencement before the most modern epoch. Such are the vertical valleys, 2,000 feet deep, in the Cañons of the Colorado, and the accumulation of globigerina mud in the depths of the Atlantic. The accumulation of peat-moss is an instance of an operation displayed only in recent times.

44. The present phenomena, though displaying the same kind of force as the most ancient, yet differ so immensely in its amount, as to entitle us to mark the distinction. We have no instance whatever of the formation of a mountain-chain in the modern period, and we are thus warranted in concluding that the formation of mountain-chains is characteristic of a former period of the earth's history. Mr. Page thus expresses the conclusion:—"Physically and vitally, the same phenomena may never be, and indeed are never likely to be, enacted again in the same region; and thus it is that the doctrine of uniformity must be held in connection with that of progression and advancement."*

* *Chips and Chapters*, p. 55.

45. I submit that the facts thus reviewed indicate the progressive law of a Law-giver, enacted from a beginning and towards an end. There is nothing in them to favour the heathen hypothesis of God *in* nature, as against the Christian hypothesis of the God *of* nature. I claim a right, in the face of all the facts, to the doctrine of the personality of a Governor, "not as the soul of the world, but as the Lord of the universe";* who, in the further language of Newton, acts as "perceiving and governing all things by His essential presence, and constantly co-operating with all things, according to fixed laws, as the foundation and cause of all nature, except when it is good to act otherwise."

46. It may be considered that the result of our inquiry is of too negative a character to be worth the pains of the pursuit. But, on the contrary, I would urge that, if as each new philosophical hypothesis arises, we can show that it offers no obstacles to the maintenance of our most cherished beliefs; if we can step into the arena of science and say, We too have a theory grounded on your facts, at least not inconsistent with them, and equal in probability to any other,—we have secured a hearing. And if, when the way is thus cleared, we can submit to the understanding of the man of science facts from another department of inquiry, the historical, purporting to embody a message from the Divine Governor, awakening or evolving an echo in the depths of our own consciousness, we may help to promote fruitful moral action and lasting mental peace.

47. It remains that I should briefly suggest the accordance between the conclusions thus derived from natural science, and the testimony of Scripture. We have seen that the order and correspondence of created things declare antecedent law, the archetype of which must be in the mind of God. The Bible plainly proclaims a beginning, reveals a Creator acting by law throughout the ages towards an end. It unfolds to us the mind of God, "before the world was,"†—at the creation,‡—during its course,§—and after its close.|| The evolution found therein is that of this divine purpose and plan. Along both lines of knowledge we are in One presence. We consider the twofold revelation, and find that the results which are being evolved on the stage of the earth, during the unrolling of the map of Time, were, in purpose and plan, arranged in eternal counsels. Are we not then ready to utter in the halls of

* Newton.

† John xvii. 5, and numerous parallels.

‡ *Inter alia*, Gen. i. 1; John i. 1-3; Heb. i. 10; Rom. i. 20.

§ Ps. cxix. 90, 91.

|| 2 Pet. iii. 7.

science the grand conclusion of the future:—"Thou art worthy, O Lord, to receive glory and honour and power: for Thou hast created all things, and for Thy pleasure they are and were created"? *

The CHAIRMAN.—I am sure you will all agree that we ought to return a cordial vote of thanks to Mr. Pattison for the very able paper which he has put before us this evening. It is a paper which contains matter fruitful of discussion, and I hope it will obtain that attention which it deserves from this Institute. Mr. Pattison has brought forward what I may call the orthodox interpretation of geology, and we shall now be glad to hear what is to be said on the other side of the question. (Hear, hear.) I need only add that we invite not only our own members, but also any of our friends who may happen to be present, to contribute to our discussions. What we want to get is the utmost discussion of a subject both from those who think with us and from those who are opposed to us, because we believe that a fair and honest debate is the best means of arriving at the truth. (Cheers.)

Mr. REDDIE.—I would like to offer a few observations, not as a geologist, but simply as a contributor towards the discussion of the paper, more especially in regard to its own propositions and in reference to what we have already printed in our records. I confess that, while joining with you, Sir, in thanking Mr. Pattison for his very able statement, I think we might have had more unquestionable proofs of Divine action from what we find in geology, and I am sorry to say that a great deal that is assumed by Mr. Pattison appears to me to be of a somewhat ancient kind as regards geological theory. At all events, whether our other authors have been right or wrong, we have already in our printed transactions a great deal of matter that does not agree with the view of geology which is here laid down for us. I quite agree with Mr. Pattison that we must trace Divine action in contemplating the facts of geology, whatever theory we accept. In a paper which I had the pleasure of reading at our last meeting, I argued from the very motion of inanimate nature to the necessity of a mover, because inanimate or dead matter could not move of itself. So that, in any kind of succession, whether by cataclysms or recurrence, or continued progression or evolution, or what you will, we should still have progression in inanimate nature; and my argument tended to show some power in the force that moves it, and that would not be a dead blind force, for such a force would be just as incapable of producing motion, as the dead matter itself. In fact, the whole must be guided and permeated by one really moved by intelligence. (Hear.) But I do not think that the proofs of Divine action to be found in this world and in the earth beneath us are to be aided by the particular theory which Mr. Pattison has put forward, and I am not at all clear as to what that theory in all respects is. I do not understand the word

“uniformitarianism.” If it means the same thing over and over again, uniformitarianism would be impossible, for there must be some progression. I have thought the theory was founded upon a notion of the special interference of the Deity at different times after the world had come to a deadlock, so as to have something fresh and to give the world another start. All geologists are aware that the theory of successive creations is now an exploded one. It is not to be found in the Old Testament ; and, without going into the day-theory as to whether the days of creation were days of twenty-four hours each or cycles of the sun, or any other periods of time, there is nothing in the Scriptures to prove that there was any particular pause in creation, and nothing like the marshalling of the different works created on one day before another day commenced. With reference to the catalogue given by Mr. Pattison in the 37th section of his paper, I am reminded of what Mr. Hopkins stated in his papers on geological formations, the first of which was read at this Institute in December, 1866, and the other in February, 1867. On adding up the thicknesses of the various strata from the Eozoic and Lower Silurian up to the Tertiary stratum, we get no less than 110,253 feet of strata. Mr. Pattison himself calls it eighteen miles of thickness ;—there are, of course, qualifying circumstances at one portion or another of the earth’s surface. But what leads us to suppose that the strata are piled up one above another in this way ? We cannot possibly know what is in the earth at a depth of eighteen or twenty miles. As was stated in one of our former papers, we have not yet gone down a fortieth part of this distance. We have not penetrated the earth for more than half a mile, and, under these circumstances, for people to tell us what the earth’s crust is at a depth of twenty miles, seems to me really anything but a scientific mode of dealing with the question. (Hear, hear.) In Mr. Hopkins’s first paper he referred to this mode of drawing what he called “ideal geological sections,” and he says this :—

“As far as the sedimentary beds of England are concerned, these sections might be accepted as representing the general order and character of the beds, provided they are not made to appear to cover each other over the whole area.”

It is not even true in England. Look at that geological map of England on the wall of this room, and observe the dark places marked for coal. You have not got coal all over England, but only in a few districts ; and other strata crop up in other places. The conclusion that these thousands of feet of various strata lie in a particular order and thickness, arises simply from the fact that one stratum has been found tilted in a certain direction, and it is supposed that it goes down for a very long distance. But all that is mere supposition, for we have no such complete knowledge of the surface of the earth ; and in the paper by Mr. Hopkins to which I have referred, that gentleman tells us that in South America, in Australia, and also in New Zealand, there is nothing like these beds which we have here—more recent beds of coal on the top of what are called the primary rocks. But the most

important point which is assumed in the paper, in the course of the argument in favour of divine action, does not depend upon that. If I have understood Mr. Pattison rightly, he rather holds to the old and exploded fused granite theory. He quotes Cotta, who talks of "the first solidification of the earth's crust;" and with regard to the quotation from Professor Huxley as to Kant's, or what is more commonly called Laplace's, nebular theory, which is apparently received, or to some extent adopted, by Mr. Pattison, we all know that there is no proof whatever of that theory. It is given up by Lyell, who is our greatest authority, and you will all remember that Professor Kirk read a valuable paper on "The Past and Present Relations of Geological Science to the Sacred Scriptures" before this Institute, in which he quoted from Mr. Geikie and the *Geological Magazine* for 1866—one well known to Mr. Pattison—and conclusively showed that the crystalline rocks, supposed to have been formed by the cooling of the nebular world, are themselves sedimentary rocks. Here is one passage from Mr. Kirk's paper:—

"At last," says Mr. Geikie, 'I am therefore forced to conclude that the crystalline rocks described above have resulted from the alteration, *in situ*, of certain bedded deposits.' It is interesting to see the effect of this conclusion as to sandstone passing into trap and granite. In connection with these rocks passing into each other, Sir Charles Lyell says: 'It would be easy to multiply examples to prove that the granite and trap rocks pass into each other, and are merely different forms which the same elements have assumed according to the different circumstances in which they have consolidated from a state of fusion.'—(*Principles*, vol. iii. p. 362, edition 1833.) Now, sandstone and even clay passing into trap and granite must be classed among the fused rocks too, or the whole 'fused' theory of trap and granite must be given up."

Recollect that Professor Kirk in his paper gives us a very fair *resumé* of the subject without committing himself or us to anything like a new theory. I do not believe we have a new theory, for I have not yet got an answer on the subject, although we have with us an eminent geologist like Mr. Pattison, who has written a very able pamphlet in reply to Sir Charles Lyell, and with a great deal of which I agree. But still, in the present state of geology, it would be a great pity for any one to suppose that any argument in favour of divine action rests on the theory that Mr. Pattison holds to, he being more steadfast in his devotion to it than Huxley and Hamilton and other presidents of the Geological Society, who have recently given it up. But I want to say one or two words with reference to certain parts of this paper which have not been quite plainly expressed. I have had some difficulty in finding Mr. Pattison's exact view as to the uniformitarian theory; I maintain that the uniform action of certain forces, once created, could go on steadily from the first without supposing that it took the very long periods of time which Mr. Pattison and Mr. Geikie seem to think it did. I consider the fact would be precisely that which would reconcile the theory of cataclysms and the theory of uniformitarianism together. We know very well that if you bend a bow or any elastic substance, you may go on bending

it until the two ends meet. In the case of a non-elastic substance, you would merely crack it, and away it would go. So it is with the crust of the earth : you have a constant pumping out of water from below, and there must be some subsidence, and a very material subsidence, from the constant pressure of gravitation forcing downwards. A great many geological changes are likely to have been produced by that pressure and subsidence. You will have heat produced, depending in amount on the chemical action within, the heat not being uniform all the way down. The idea of approaching a central fire is nonsense. Take constant forces acting in a uniform way and straining this great globe. You can understand that, after straining steadily for years, a cataclysm would take place suddenly ; not that the action is different, but the results are different. No one can look at the rocks which are riven off and not suppose they were riven off by some sudden cataclysm. As to any theory of upheaval, that was disposed of and torn to tatters in Professor Kirk's paper, although in a very kindly way. Under such a theory as that, there would be a great escape of internal fire, the operations of which we should see ; but there really is nothing of the kind. I do not know whether Mr. Pattison believes in the upheaval of the Scandinavian coast which he has mentioned, but I may point out that in the *Geological Magazine* of two years ago there is a paper by the Earl of Selkirk, who surveyed that coast and found no proof of that rising. He went to the very place where Lyell had examined the shores, and to other places also, and the result of the survey seemed to depend very much upon whether it was high or low tide when the examination was made. The arguments which Mr. Pattison uses to show that a different action went on before to what takes place now, are inconclusive. He says it is because we do not see these things. True, we do not see a man grow, but he goes away a boy and he comes back a man ; and he is the same person, although a change has taken place in his appearance. I am not at all clear, in reference to one of Mr. Pattison's statements,—that the accumulation of peat-moss has only occurred in recent times. It is true that we know very little of what has happened, but it is very obvious that if peat-moss got overwhelmed it would go down ; and how do you know that you do not get petroleum and other similar oils from that source ? We know very little about it, and I should be glad if Mr. Pattison had seen his way to proving divine action from the wonderful uses to which the metals and the oils and the various things got out of the earth can be applied. They are so admirably adapted to man's use, that we should not know what to do without them. But as for building up an argument on any one particular geological theory, I should hope no one would suppose that the proof of divine action rests on that. There is one passage where Mr. Pattison quotes Mr. Page in the following words :—

“Mr. Page thus expresses the conclusion :—‘Physically and vitally, the same phenomena may never be, and indeed are never likely to be, enacted again in the same region ; and thus it is that the doctrine of uniformity must be held in connection with that of progression and advancement.’”

I never understood anything else, but what I want to know is, why cannot the same combinations produce the same effects again? I really do not see the point of the argument. The whole thing amounts to this: that some of the old geological theories are exploded by recent discoveries, and I think Mr. Pattison has scarcely done justice to the recent discoveries in the Atlantic. I am not at all clear that it is a fair way of putting it to say, that "the colder spaces in the Atlantic are less marked by organic life than the warm currents." It is true that life is more prolific on the surface in warm places, but Dr. Carpenter removed that impression from my mind as to the marked difference. There may be a difference in some less degree, but not to the extent that one would suppose. You have the Arctic fauna and flora, so to speak, almost alongside the fauna and flora that belong to warmer regions, and I quite understood that they were almost as prolific the one as the other. I think that, as regards geology at present, it would be much better if we could wait till we have tabulated the new facts and placed them side by side. I cannot accept this paper as a fair *resumé* of the existing state of geological opinion or of geological science. If you were to take away the introduction and the concluding passages, which seem to have been inserted with reference to this Society, and were to read the paper as a statement of the present condition of geological opinion before the Geological Society, I do not think it would have many supporters. I do not gather that the paper accords with Huxley's views, or with those of Mr. Hamilton, the former President of the Geological Society, and it is somewhat at variance with a great many of what I believe to be the facts of geology. I am sorry that I cannot do anything more than put forward, as it were, second-hand opinions upon the subject; but I think, when we have issued a copious *Journal of Transactions*, and thrown down a challenge to the Scientific world, that if those positions which were taken up by Mr. Kirk and by Mr. Hopkins can be assailed and overthrown, it is almost a duty to attempt to overthrow them, and not quietly to ignore them. We are not entitled to say that we know so much about the Atlantic sea-bed as Mr. Pattison assumes to do. We do not know what amount of accumulation is going on there—we have not the slightest idea. It may be twenty times as much as Mr. Pattison supposes: we know nothing of it. When Professor Huxley delivered his Address in Sion College two years ago, he put the Globigerinæ down as among the dead animals, and he almost laughed at me when I asked if they were not alive and breeding. But we now find that they are. I hope some one better qualified to continue this discussion will now speak, but I wish to enter my protest against the statements and views of this paper being accepted in the face of those other statements which have already been recorded in our journals. (Cheers.)

MR. BRADLAUGH.—There are one or two points in the paper read this evening—a paper of which a great proportion, however we may disagree with the remainder, cannot be too widely admitted or too strongly maintained; but there are one or two points entirely different from those raised by Mr. Reddie, which occur to my mind. On the 6th paragraph of the paper, near

the commencement, an objection occurs to me. The point is taken as against some people called the evolutionists, and Mr. Pattison says,—

“The evolutionists say,—given force and matter, the results must be what they have been and are. Granted, if a third term is added,—a beginning.”

Now it will be precisely in reference to that third term that I shall address the few words I wish to put to you, and I address these few words in consequence of the very frank invitation which you, Sir, threw out to any one, whether connected with this Institute or not, to take part in the discussion. (Hear, hear.) I confess that I have not gathered from this paper any notion of a beginning in relation to existence. I have gathered change of phenomena, but I have not gathered the application of the word “beginning” to substance. I have not gathered the slightest atom of evidence in favour of an absolute annihilation in thought, of that which exists, whether you describe it as Mr. Reddie has done, as “dead inanimate matter,” or whether you describe it, as it is spoken of here, as “nature.” I see nothing in the paper to lead me to the possibility of thought on the beginning; and if that is so, it appears to me, with all submission, that the paper entirely breaks down in that which it was set forth to prove, because the whole paper puts it that the assumption of a beginning and of a creator is fairly deducible from the change of phenomena. But surely that is hardly so. All that the paper shows is change—cessation of existence there is not an attempt to show. But it may be said: “Yes, that is dealt with in the 13th section.” How is it dealt with? Mr. Pattison says,

“If all the force of the solar system is gradually becoming changed into heat, and if some of that heat remains on the earth’s surface, not reconverted into force, things must come to an end.”

I suppose the reason why that would be so is clear to the mind of the writer, but I confess that it is not at all clear to my mind. One class of phenomena is changed into another class of phenomena, and the author of the paper assumes, therefore, that there must be an end of existence. But I do not see how the change of the phenomena and the change of the conditions has anything to do with an assumption of the cessation of existence. It may be simply the incapacity of my mind to follow out reasoning of this kind; but when Mr. Pattison takes a quotation from a very able writer, the matter becomes still more startling. Mr. Pattison quotes from Adolf Fick, as follows:—

“We are come to this alternative: either in our highest, our most general, our most fundamental scientific abstractions, some great point has been overlooked; or the universe will have an end and must have had a beginning; could not have existed from eternity, but must at some date not infinitely distant have arisen from something not forming part of the chain of natural causes, *i.e.*, must have been created.”

Now, I fancy, that it is very easy to get into a loose way of using big words without being quite clear what we mean by them. What is meant by

"having existed from eternity"? Simply, I suppose, that past duration is to the mind of the one attempting to limit it entirely beyond any power of limitation which in imagination he can apply to it. It simply means illimitable past duration. Then what has the author done? He has shown you the past, a period which to him is an illimitably vast period of change of phenomena, and he says: "Because there has been this, therefore there has not been an illimitable period of existence." Well, that may be true, and perhaps if I had better opportunities of accustoming myself to the mode of reasoning pursued by Mr. Pattison I might better grasp it; but it seems to me that the conclusions are exactly the opposite of the evidence, so far as I can follow the matter, and admitting the whole of the evidence to be, in point of fact, thoroughly reliable evidence. But let us look at this a little further. One passage in the quotation is:—

"The universe will have an end, and must have had a beginning."

Is there any justification of such a position in the paper itself? There may be evidence that the condition of existence may cease to exist as such, but surely that does not touch the great question at all. I do not know whether I shall be in order in commenting on what has fallen from Mr. Reddie, but if I am, I should like to say a few words, because I do not understand what is meant by "dead inanimate matter." The phrase is to me one which entirely begs and assumes the whole question against one standing, fortunately or unfortunately, in the same position as myself, and I should deny the right of any one to take any conditions of existence and to coolly fasten on them a deficiency for the purpose of manufacturing some cause for supplying the deficiency which only actually exists in the definition you give to it. We are told of force and its action in connection with that matter which is spoken of as "dead and inanimate," and of force evolved out of divine action, because we are told of that divine action not in nature, but as contradistinguished from the force acting in nature; so that the writer of the paper assumes, and Mr. Reddie must be taken to assume, not a dead inanimate state of things, but all sorts of capabilities for action so far as they are involved in that word "force"—all sorts of capabilities for action as the necessary result of a certain condition of existence. Now I know how extremely difficult it is, when one man is in the habit of thinking in a particular direction, and he meets other people in the habit of thinking in an exactly opposite direction, to make one's thoughts clear. The great difficulty in a discussion of this kind is that we stand upon opposite sides of the stream, and instead of throwing at one another we throw away from one another, because the words we use do not convey the same meaning to one another's minds. The difficulty occurs to me, why cannot dead inanimate matter move? You say it must have a mover. Is it because the movement is unlike anything which you can conjecture of dead inanimate matter that you have to imagine a mover for it? If so, you are driven into a series of dilemmas by your argument. If you assume that the inanimate cannot move because like cannot result in unlike, then you are placed in this dilemma, that the governing force, or Deity—call it what you will—

could not have created inanimate matter. I feel the extreme difficulty of saying what one might wish to say on a paper of this kind, necessarily limited by the particular scope which the paper has ; and if what I have put before you is, as I am sure it is, utterly incomplete, I hope you will understand that there are words in this paper which do not convey meanings to my mind, and evidence which does not seem to me to apply to the argument which you use, or which seems to me to lead up to entirely different conclusions.

MR. REDDIE.—I would only say, as Mr. Bradlaugh was not present at our last meeting, that the argument he has used to-night was more the subject of our then discussion than of the one now before us. Of course, Mr. Pattison did not profess to argue out this particular point, for he says : “ Granted, if a third term is added—a beginning,” and that lays those people now discussing the question open to a charge of weakness which does not belong to them. I do not wish to stand between yourself, Sir, and Mr. Pattison, or I could easily explain and clear the ground with regard to the distinction which I drew between dead matter and force ; for instance—there is a great difference between a dead man and a living man.

THE CHAIRMAN.—I am sure we are all very much indebted to Mr. Bradlaugh for his clear remarks. (Hear hear.) There is great value in the ideas which he has set forth. He has, however, laboured under the disadvantage of not being a member of our Institute, and of not knowing what we have already had before us.

MR. BRADLAUGH.—If I am not out of order, I may say that it seems to me that if the paper was not intended to prove the view upon which I have argued, it fails to be anything more than an interesting paper on geology.

MR. REDDIE.—It was intended to prove divine action, not the existence of a God ; there are plenty of arguments to prove that.

MR. BRADLAUGH.—But they are not in the paper—the paper really assumes a deity.

THE CHAIRMAN.—I think it is much fairer that the writer of the paper should be the last speaker, than that I should have to sum up the arguments. I must say that though I thoroughly and heartily agree with the conclusions of Mr. Pattison, I disagree, most thoroughly, with his scope. It limits the paper entirely to a state of geology which, I think, is passing away, and hence the paper would not be accepted now as a perfect *resumé* of the present state of geological science. I think it is somewhat out of the atmosphere of this Society after the exhaustive papers we have had from Professor Kirk on this subject. Geology is about the one science the most in its infancy. It has worked very hard, and it has done very good service by the vast number of facts which it has accumulated ; but, at the same time, it has pressed on what I believe to be one of the weaknesses of human nature on the part of those who have accumulated those facts, inducing them to consider themselves all-wise, and bound to account for facts as soon as they have accumulated a few. (Hear, hear.) Very often those who are concerned in these things are not so much patient observers of facts as generalizers of them when

they get hold of a few. They wish to put them at once into the form of a theory. Men acquire a greater reputation, as they suppose, from inventing theories than from carefully examining and tabulating facts. The real benefactors of science are the slow accumulators of facts, and not the inventors of theories; and that is shown throughout the whole course of geology. The facts of the last fifteen or twenty years have almost entirely annihilated the theories of the previous twenty years. Any one who studies the exceptional character and history of geology must arrive at that conclusion, and I think that some such feeling as that has been present in Mr. Pattison's mind, for I find he most carefully avoids, as far as he possibly can, those theories which are now exploded in geology, but which have been lying at the foundation of it, as we may say, for the last quarter of a century. How did geology take its origin as a science? It took its origin as a science from the power of observation of Mr. Smith, the eminent first English geologist, to whom even the continents generally have to give the palm as the founder of the science. How did he found his quasi-science of geology? From the fossil remains of certain strata which enabled him to identify those strata in other parts of the country. He was exceedingly well acquainted with the nature of certain strata throughout England, and when taken into museums in different places, he astonished the collectors of fossils by being able to say: "You found that fossil in such a stratum, and you found that one in such another." The being able to identify the fossils from the various strata in which they were discovered, and *vice versâ*, was soon formed into a theory; there being so many strata, there must have been so many different series of creations that lay at the bottom of all ancient geology, as we may call it. Every distinct stratum was marked as a distinct creation. Take that catalogue of strata given by Professor Haughton, and which Mr. Pattison gives in his 37th paragraph. You have the Eozoic stratum, thousands of feet thick; the lower Silurian, so many more thousands; and a long list of other strata. Each of those strata has a different series of animals peculiar to itself; so that, given a certain animal, you at once identify its stratum. You hear and read about the cretaceous stratum, nearly all chalk, with a little silica mixed with it; the carboniferous stratum; the sandstone stratum; and so on. And now you begin to think that there are certain chemical or lithological characteristics of strata. Now, I have been present at discussions among the most eminent authorities on geology, and I have heard them give up all idea of anything like a lithological arrangement of strata. There is no identification of strata at all according to their lithological character, but only according to their paleozoic character. Given the fossils—the animal or vegetable remains in the stratum—and you can identify not only the stratum from which those fossils are derived, but its age in the earth's history. That was a certain hypothesis which was a very good solution of a certain number of facts as they were then accumulated, but how have the facts changed? It has been found that there is not that paleozoic distinction between the strata which was at first asserted. The first thing which we were then told was that there was a part of one stratum penetrating the

stratum next to it, and carrying with it some of its animal and vegetable remains. That was another theory. Then we came to a new theory ; that stratum A contains so many per cent. of the remains of stratum B ; and stratum C contains so many per cent. of stratum B ; while stratum B contains so many per cent. of strata A and C ; and that there was that uniform jump always to be found. I have heard an eminent geologist in this Society break down all these theories, and still say :—" But we can fight for three distinct creations, for three distinct leaps or chasms between some of these strata." But I ask whether the present state of geological science will do anything of the kind, and I maintain that it will not. The whole of the old geology depended on this particular hypothesis. It was carried into theological matters because certain geologists thought that they had got a very convenient opportunity for the interpretation of the first chapter of Genesis ; and because, I believe, they were good Christians and what Mr. Bradlaugh would call orthodox men ; but they were weak in their faith, and could not wait for the slow development of their facts. They thought that out of the facts which they then professed, they could interpret the first chapter of Genesis. It was all very well so long as they found the marine fauna low down, and the terrestrial fauna much higher up ; but when the terrestrial fauna was found low down in company with some of the most ancient marine fauna, then their favourite theory of a succession of creations fell to the ground, to be followed by a new theory, interpreting the days in Genesis as meaning unlimited periods of time. Well, that theory took the popular fancy, and was for a long time a very universally received one. But we come now to the slow development of these facts. The first great onslaught upon these geological theories dates from the dredgings of Professor Forbes. Now the dredgings of Professor Forbes were one thing, his theories were another, and his theories have already fallen into oblivion on account of other facts which have come up since. He first pointed out that grand phenomenon in nature that the marine fauna were dependent, in a great measure, on the temperature of the ocean in which they were deposited, and that the Gulf Stream touched upon a certain portion of our coast with its warm water impinging upon our shore ; while the Arctic stream touched upon another portion of our coast, so that you had within a mile of one another—ay, even more closely together than that—animals belonging to the coast of Spain, with their exuviae lying deposited in the sand ; and animals belonging to the shores of Sweden, and even of a more thoroughly Arctic character, being deposited. When he carried on his researches further, he found that on a portion of the coast you have an African fauna. Now what have you here ? He pointed out to men's minds the fact which had never struck them before—and a most important fact it is—that if we had by some cataclysm or some extraordinary phenomenon quite within the possibility of occurrence—if we had the coast of Devonshire raised above the surface and left dry, according to geological theories you would say that the Arctic fauna belonged to one age, and that the Spanish or the African fauna belonged to another age. Now that was a great fact made out by Professor

Forbes ; and his observations led us to see how rash it was to judge hastily from a few specimens dredged up from the bottom of the sea. He contended that there were various zones of vegetable life, but at a certain depth of the sea all these zones ceased, and you had none at all under a depth of 300 fathoms. Of course there was a reason given for this ; it was, that there was not enough to nourish animal or vegetable matter. It was said that shells became more and more colourless the deeper you went down ; that beyond a certain depth they became white ; and that at a little lower depth there were no such remains whatever to be found ; and that in that way you came in the ocean to a perfectly azoic part. But since that time the progress of civilization and the necessary development of science have brought about the laying of an Atlantic telegraph cable, and before that could be done it was necessary to plumb the depths of the Atlantic, not at enormous depths certainly, but at depths of three miles, and then with exceeding difficulty and at great cost both of money and time, we got up from the bottom of the Atlantic a few specks—literally only a few quills full—of the ooze of the Atlantic. Those few quills of Atlantic mud gave the death-blow to the old theories of geology. (Cheers.) They showed that a cretaceous formation was going on at the present time, and therefore, given a cretaceous formation, you cannot tell how old or how young it is. It might be the work of yesterday, or it might be the work, so far as science could say anything to the contrary, of a thousand or of a million years. You have brought up an ooze from the bottom of the Atlantic, showing a cretaceous formation which is identical with that cretaceous formation which we are told, on the evidence of the old geologists, must have existed for I do not know how many thousand years. Professor Huxley at Sion College, when lecturing the clergy on geology, told them how many thousands of years this formation must have existed ; but upon what data are you to make your calculations ? That was the first thing that took place in laying the Atlantic cable. Then there was an attempt to lay another cable, and the ships went a little more to the north, and, to the astonishment of all the naturalists, they pulled up, from depths far below the azoic depths of Professor Forbes, living star-fish as red as boiled lobsters. (Laughter.) When these things were brought up, the first thing that the theorists had to say, was that these fish changed their colour as they were brought up. (Laughter.) There was another thing found which has never yet come out in public to my knowledge, and which I saw with my own eyes. A small portion of the old Atlantic cable was dredged up, and it had well-developed eggs attached to it ; we could not determine what eggs they were, but they were living eggs of fish, attached by pedicles or foot-stalks to a portion of the cable not much thicker than my finger. That utterly put an end to all Professor Forbes's theories of the non-existence of animal life at certain depths, and under a certain pressure. All this has been confirmed, and thoroughly confirmed, by Dr. Carpenter, who went out with better dredging appliances, which enabled him to get up larger quantities of these things from the bottom of the ocean. At the same time these matters only show us the vast amount of our ignorance. Suppose the

whole of England were to be submerged, and that certain currents operated to take off all the grass land and denude, in one part, all the cretaceous downs of Wiltshire ; in another part all the clay lands, such as we see around us here ; in another part the slate of Wales ; and in another part the bare rocks. And then suppose men to go plumbing down over England to take a geological survey of the country at a depth of three miles under the ocean by quills full of mud and ooze—what notion would they have of the geological formation of England, even if the country were wholly denuded of its grass ? But what have such experiments done for us ? They have exploded very many of the old geological theories. What is the proportion of the marine fauna of the strata with which we are conversant compared with the proportion of the terrestrial fauna of the earth ? What do we know of the marine fauna at present existing in the world ? What has been done for us by these latter experiments ? They have carried the existing generation, as it is called, back to long-past epochs, and not only have we now got living animals identical in species with those which are found in the cretaceous series, but we have gone down even to the oolites. (Hear, hear.) Now I say that all this shows how dangerous it is to argue upon theories which are invented to account for the slow accumulation of facts. The accumulation of scientific facts is a very hard and a very laborious work ; the invention of theories is a very easy, and a very engrossing, and a very seductive kind of study. But when you compare what is done by the two classes of workers who pursue these two different branches of study, you find that the theorists have their work undone by the slow accumulation of facts. Looking at this paper of Mr. Pattison's, I find that to some extent it is based on what I believe to be a vulnerable point in the old geology,—I find it is working upon the uniformitarian system, the evolutionary system, and others. Even if we had more facts, I do not know that we should ever have sufficient to account for these things. People seem to think that if they can only get a few facts they can easily account for everything. It is like that celebrated problem,—given, the number of a ship's masts, the shape of her sails, her course, and the price and quality of the wood with which she was built, to tell the captain's name and the number of his seamen. (Laughter.) That seems to be like some of the things which many so-called scientific men take upon themselves to determine. But when we know how very slow is our advance, and how hard it is to arrive at truth with anything like mathematical precision, we should always doubt where our data are few, and where there are so many things interfering with them that it is difficult to arrive at a decision. Turn for a moment to astronomy. Who can say that we know very much of the planetary theory ? If the orbits of the planets were more elliptical than they are, and they diverged from one another more ; if the sun were not so extremely large in proportion to the size of the planets, that you must include the disturbance of all the other planets with regard to any particular one, and then take the mean of disturbance ; if it were not that the orbits are nearly circular, you would have to arrive at a planetary theory and a

human theory under a far altered state of circumstances. If the conditions were so altered, you never would arrive at a clear theory by mathematics ; it is only because the problem was one adapted to the state of your intelligence that you have been able to arrive at anything like accuracy in it. In matters of geology we are in a far worse position than in either astronomy or optics, and we know how far astray men have gone in both those sciences. I thoroughly agree with Mr. Reddie in the blot he has found as to this unhappy catalogue of strata made by Professor Haughton, and quoted by Mr. Pattison in his 37th paragraph. How does he know that the Eozoic stratum is 26,000 feet thick, and the lower Silurian 25,000 feet ? In order that we might arrive at a sound conclusion about that, it would require us to know the crust of the earth for a depth of at least fifteen miles. What do we know of the crust of the earth at that depth ? Have we scratched into that crust for anything like such a depth ? Have we gone a mile and a half, or even a mile deep ? We have had very learned inferences as to the pressure of the atmosphere and various other conditions which would take place at a height of five miles in the air ; but when that height really was attained in balloons, it was found that all the theories which had been worked out as to temperature and other matters were entirely blown to the winds.

MR. REDDIE.—The thickness of the strata given by Professor Haughton is 110,000 feet, which would really make it twenty-one miles.

THE CHAIRMAN.—Well, then we have twenty-one miles of theory and about half a mile of practice. (Laughter.) It would be all very well provided these theorists gave us such a hypothesis as would leave no other way to account for their facts. At present, we have already had sufficient experience, from the manner in which theories have failed, to wait until a few more facts have been accumulated, and then we may complete our theory. I was very much indebted to Mr. Bradlaugh for some remarks he made which show us how we reason with matters fully, perhaps, in our own mind, and yet fail to make one who views the question from a different stand-point appreciate or understand our position. Any one would be able to follow the difficulty of this kind which he pointed out in relation to Mr. Pattison's paper, and in relation to Mr. Reddie's distinction between dead and living matter. Now, I believe that there is such a thing as action and such a thing as motion in dead matter as well as in living matter ; and I think that Mr. Bradlaugh pointed out a very important thing in this question, though I do not know whether he would arrive at my conclusion. I suppose not. It is from the action that I see going on in dead matter that I am as much convinced of a beginning, and an originator, and creator, as I am in the design which is displayed in the motion of what we call living matter.

MR. REDDIE.—That was precisely my argument.

THE CHAIRMAN.—I believe that there is an enormous distinction between dead matter and living matter—that there is a hiatus, a chasm between the one and the other which no science has ever been able to bridge over. But yet I would grant to Mr. Bradlaugh, that I do not see how, from the exist-

ing state of matter, you can prove an end of it. I do not think that is to be arrived at logically, and I think that Mr. Bradlaugh pointed out a difficulty there ; but whether it arose from a want of clearness on the part of Mr. Pattison or not I am unable to say. Suppose the astronomical theory believed in before Laplace were true. Up to that time it was supposed that there were certain changes going on in the orbits of the planets, which in the end would inevitably drag all the planets into the sun. Suppose that the sun is a mass of heated matter, and that all the planets fell into the sun and were destroyed. Still the matter of which the planets consisted would not be destroyed. (Hear, hear.) I perfectly agree with that view, and I am indebted to Mr. Bradlaugh for coming here ; because we want people to come and point out the holes in our armour, and we ought to feel obliged to men who show us where we are faulty. If you burnt up all the planets, still something would remain. For instance, when this gas by which we now see is burnt, it is not destroyed, it is only changed in its form and conditions ; and if all the planetary bodies were burnt up, there would not be a particle of matter destroyed. I quite grant that, from the mere examination of matter itself it is impossible to arrive at any argument as to its ending or beginning, so far as dead matter is concerned. There is one argument that a geologist may take up : he may say : “ No matter what theory you adopt with regard to living matter—whether you take the slow processes of evolution, whether you take a nebular earth slowly cooling and then forming granite, and so on, or whether you take a slow series of changes going back to an indefinite time—the earth does show the convincing fact that there must have been a commencement of those phenomena which we call life, entirely distinct from the remarkable phenomena belonging to dead matter.” If I were to confine myself to dead matter, I believe I should have as strong an argument for design as I should find in living matter. I take up the simplest crystal which is united with others in forming a small piece of granite, of whose origin I have not the slightest notion. I know that granite is formed of crystals, composed of three and sometimes more distinct mineral substances, penetrating and interlocking one another, and yet each one a distinct crystal ; but I have no conception, from what I know of art or nature, of how that mysterious substance can be formed. I find nothing corresponding to it in life, or in the rocks of other periods. Mr. Pattison in his paper has fallen into the old notion that granite or the granitic rocks are the oldest of all. That was the old theory among geologists, but it has been acknowledged by Sir Charles Lyell in his last book that you may find granite of all ages, and granite formed in any given age. But I have no means of conceiving how, either by volcanic action or by any process of crystallization, the granite rock can be formed. But leaving that point, I say again that if you take any of the crystals of the granite (for there is not any silica found by itself, but it is in combination, and the most extraordinary combination, with other substances, as mica and felspar, most composite minerals),—if you take the crystals or the chemical constituents of the granite rocks, you have the

chemical constituents of everything else on the earth's surface. If I were put to it, I could find as good an argument for design in these things as I could find in such marvellous works as the eye, or the ear, or the heart of man, which I cannot conceive to have been formed without design ; and it is when I go back to the argument of design that I am led up to feel that none of these things could have originated from chance. I would appeal to that to which the men of science are obliged to come when they use their eyesight or anything else. They bring me a piece of flint, chipped, and they say :—" We found that in a certain stratum, and it contains strong evidence that man must have been in existence when it was deposited in that stratum, for it could only have been chipped in that way purposely by some one using intelligence." I say I do not believe it, and I think certain geologists say they do not believe it—but call it a mere piece of broken flint. I recently went with a friend of mine to a gravel pit, and we saw heaps of average specimens of these things. But it is said by certain scientific men,—“ Oh, there can be no doubt that there was a certain amount of design displayed in the manufacture of that. It is shaped like the head of an arrow, or it has certain marks round it which could not be the result of mere accident arising from the chipping of many flints together.” Now if, on the other hand, they bring me a piece of iron hammered out in the form of a fish-hook or a spear-head, with a piece adapting itself to the ferrule, I should be called perfectly mad by any geologist or archæologist if I said that it was an excellent piece of natural iron formation. But if I appeal to the eye as an evidence of design, or to crystals or other dead formations, what do they say ?

MR. BRADLAUGH.—Let me say at once that if I admitted design, I should see it quite as much in the crystal as in the eye. I think the argument would be rather stronger in the one case than in the other.

THE CHAIRMAN.—I quite agree with you ; but was alluding to the views of other people. We are very much indebted to this argument of design. There is nothing in the mere chemical laws of matter which will give it to us, but it is obtained when we find these chemical laws of matter combined with other things. For instance, if there had not been a particle of animated matter on the earth's surface, we could get an argument for design from all the chemical formations of the earth, and its position and revolutions round the sun ; but we must come back to those things which are fixed in our own minds, and which we cannot get rid of—those things upon which we have to build all our sciences. We cannot get our science of mathematics without definitions, and without certain things being granted which we form into axioms. There are portions of our nature which we cannot prove to anybody—we can give no reason for them, but still we must assume them. These things, I say, do not belong to the laws of time or space, to the laws of geometry, or to those of dynamics ; but they enter into all human knowledge. They are so innate in man's nature, that he cannot get rid of them ; and if I had such an article as that inkstand brought before me, that would be a sufficient argument to me that it was not an ordinary formation

or combination of the various particles of matter without an intelligent operator acting upon it. Unless I were a lunatic, I should be bound to say that it displayed human skill and invention. But then I point to works which are infinitely greater in their combination of matter and which show infinitely greater wisdom than man can display, and a greater acquaintance with the profound laws of mathematics, and with the profound laws of chemistry and every other science; and I put those works before you and say:—"I have a ten-thousandfold accumulation of proof that I must be a greater lunatic if I deny the existence of a superior designer and creator in all this than I should be if I denied that the inkstand was a proof of the existence of a man with a mind capable of conceiving and executing such a thing." That is the difficulty which we have to get over, and we must always go back to these things as our first principles. (Cheers.)

MR. PATTISON.—I feel like one of those figures in Poussin's "Deluge," where the rocks are torn from their beds, and everything is topsy-turvy (laughter); and I feel that many persons, not excepting Mr. Bradlaugh, will look upon my facts as a complete chaos. But, notwithstanding the shafts which have been aimed against the old geologists, I must plead guilty to the soft impeachment that I am one of them. And I will add to that, that there is no fact in modern geology which does not fall in with and supplement the facts of old geology. Theories I do not know much about, but with one's hammer in one's hand, one carves out certain facts which I have attempted to bring before you, founding upon them certain conclusions. Mr. Reddie says we cannot prove that the earth has eighteen miles' thickness of strata. I have not said that they do exist in any one place, and because of that he says they are not so thick as we make them out to be. Now I do not know whether it has ever fallen to Mr. Reddie's lot to help a piece of tart or bread-and-butter pudding among his children. (Laughter.) The little ones want to know what is at the bottom. The spoon is put in, and part of the pudding is turned up, and we soon have evidence of what is at the bottom.

THE CHAIRMAN.—But did you ever put your spoon eighteen miles deep? (Laughter.)

MR. PATTISON.—No, but I say, thank God, He has done it. Strata that would for ever be buried are broken up and brought to our sight. We measure them; we measure the various layers, trying to exclude all reduplications and faults; and those measurements, so far as I can judge, are certainly within the truth. But perhaps one is wrong in attempting to do more than give the facts; I was asked for a paper, and I supposed it was to have a certain scope, and therefore it is that I took a certain line of argument, I tried to make it bear upon a certain conclusion. I did not go into the argument from design, because that has been so beautifully done, so abundantly done, and so ably done in the *Bridgewater Treatises* and by Hugh Miller. It would have been hopeless to attempt to give you anything new on the subject, and impossible to give you anything half so beautiful as the works I have referred to. But, seeing the present state of geological

theory, I did attempt to bring before you an argument to show that the doctrine of evolution, which seems to be accepted now, is one which, within certain limitations, is not altogether contrary to the beliefs which we here hold. That was the scope of my argument, and I still think that though I may not have proved that which I did not attempt to prove, I have indicated the limits of geological thought and reason, and shown that within these limits I can take the facts and say that there is nothing in them, granting evolution, which is at variance with my theory. I do say, and I think I have a right to say, that, looking at all these long ages, and the circumstances they indicate, they prove the existence of order which implies a governor, and that that governor had a design. (Hear, hear.) Therefore I bring in this argument, and I do not think it has been upset or displaced by what has fallen from Mr. Bradlaugh. I have not attempted to convince him—I have only pointed out what is the standing-ground for my view, and I believe that that is all of which the subject is capable, and that when you attempt to do more you will do mischief. Therefore it is that I have brought forward this form of argument in order to show the safe foundation on which you may rest in the acceptance of beliefs. That is really the aim of this paper. I may have been mistaken, and suppose I have been, for I have tried to quote Page, and Lyell, and others whose opinions may be supposed to be the least favourable to my own, and some gentlemen have seemed to think that they were my opinions. But that is not so, and I am only sorry that I have expressed myself so badly. We physical people should not meddle with metaphysics. I think that, notwithstanding all that has been said of the old facts of geology, they are facts as much as the existence of St. Paul's is a fact. We have a definite succession of strata, known by certain characteristics, and to my mind that definite succession of strata indicates a governing by law, which law has been indicated from the first. With regard to the conclusion as to a beginning, I have put that just as it struck me, that the facts do indicate that you cannot escape from the idea that there has been a beginning, if you prove that their definite order and form cease to be uniformitarian. Mr. Reddie has advocated the cause of the uniformitarians, but he has misapprehended the ultimate scope of their argument. Their argument is, that there is no trace of a beginning or end, and that we need nothing more than present causes to produce all the effects that in millions of years have worn the earth down and by volcanic agency brought it up again. I admit it is against that argument that I have directed the feeble forces of my artillery, and think I have proved that it is not a true conclusion; and if so, I claim to have proved that there was a beginning.

MR. BRADLAUGH.—Would you mind saying how change of phenomena can possibly involve the discontinuance of phenomena?

MR. PATTISON.—It does not.

MR. BRADLAUGH.—How can you imagine change of phenomena without discontinuance?

Mr. PATTISON.—The character of the change is one that indicates to me there was a purpose in it.

Mr. BRADLAUGH.—But does not change of phenomena always presuppose a precedent phenomenon, and therefore a discontinuance?

Mr. PATTISON.—No, I know nothing beyond the phenomena, nor do you.

The CHAIRMAN.—Mr. Bradlaugh must admit that we must come not to physical causes, but to metaphysical causes, for origination. (Hear, hear.)

The Meeting then terminated.

ORDINARY MEETING, 18TH APRIL, 1870.

JAMES REDDIE, ESQ., HONORARY SECRETARY, IN THE CHAIR.

The Minutes of the last Meeting were read and confirmed.

The following election was announced :—

ASSOCIATE, 2ND CLASS.—Rev. B. W. Savile, M.A., of Exeter.

Also, the following presentation of books for the Library :—

“Astronomical Geology.” By R. G. M. Browne, Esq.

“Cause and Effect ; or, the Globe we Inhabit.” By the same.

From the Author.

The CHAIRMAN.—In calling upon Mr. Aubrey to read Dr. Hitchman's paper, I must say I am sorry that the author is not here to read it himself, because it is one of a somewhat peculiar character, and the subject matter has been made his especial study. Perhaps we made a mistake in having a meeting on Easter Monday, still the attendance is a little better than I expected. I have to add that Dr. Hitchman intended to be here, but, owing to the illness of his daughter, we are deprived of his presence ; and this being the case, must do the best we can in his absence.

The Secretary then read the following Paper :—

ON TRUE ANTHROPOLOGY ; OR, THE SPIRITUAL, MENTAL, AND PHYSICAL CONSTITUTION OF MAN. By W. HITCHMAN, ESQ., M.D., HON. LOCAL SEC. V.I., *Liverpool.*

Νοῦς ὁρᾷ καὶ νοῦς ἀκούει, τὰλλα κωφὰ καὶ τυφλά.

1. **B**Y True Anthropology, I understand, not only scientific researches into the Natural History of our Species, but the spiritual, mental, and physical Constitution of Man *fairly represented*. Humanity proper is not Animal Organization—it is the Neshamah of Lives. As ordinarily interpreted by Anthropological Societies, it means only the *historical* study of Man, mentally and physically. But surely there is no measureless distance between נֶשְׁמָה נֶשְׁמָה Anima sed humana tantum, and רִיחַ, Spiritus revertetur ad Deum.

In Science, the History of Animals is the History of Man. It would, I think, be an insuperably difficult task to frame a set of articles of belief, requiring a larger measure of unqualified credulity, than the scientific creed of modern Anthropology, or External Man. It runs thus: Spirit is an imaginary substance created by priests. I believe in Law, but no Law-giver; in the life-giving power of Force and Substance, Intelligence from Non-Intelligence, without conscious Author, and that Metaphysics and Theology deserve contempt. I believe in the natural cohesive magnetic formation of the Earth on which I dwell, and the origin of Man from Beast, as Efficient Cause of Permanent Human Types, the never-ending development of species, in animated nature generally, first by Spontaneous Generation, afterwards Natural Selection—sheer material strength, and consequent destruction of the weak, the sole guiding Power, visible reality the only reality. I believe in the eternity of matter, which sets itself in motion, and governs all worlds, and I look for the oldest *Homo Sapiens* in pliocene, or miocene strata, and that his fossilized bones will be found, on examination, to be either an Ape more anthropoid, or a man more pithecoïd, than any yet known, Neanderthal or Engis Cranium notwithstanding, the sure mortality of the Human Soul, which is but an attribute of Brain-Protoplasm, and the regular order of the whole Universe, from the inherent harmony of Cosmic periodicity, arising from Molecular Machinery, diversity of *origin*, and diversity of *kind*, in Man, together with the evolution of all living beings, one from another, Naturally. Fundamental Inequality reigns, but no God, apart from Matter.

2. NATURE, in Man and Animals, like everything *in* us and *about* us, is a Chaos, without Method. The very word, in Greek, is itself suggestive of progressive transition from one step to another; it necessarily implies a principle of unity with progression. The Supreme Light of Living Knowledge, as Coleridge has well remarked, is conceivable only as "*the relation of Law*," absolutely perfect alone in God, who is *ἐν πάντι* and *πρὸ τῶν πάντων* also. Professor Huxley, like Dr. Carl Vogt, sneers at the idea either of spirit, or vitality, yet is ready enough to admit the existence of a "*subtle influence*" even in the essential operations of Protoplasm considered as the Physical Basis of Life and Mind in animated Nature. Vital actions, however, are peculiar to living beings, and cannot be *imitated* scientifically. Yet Nature, in Man and Animals, we are everywhere assured, both at home and abroad, is "*exclusively*" compounded of the ordinary chemical and physical forces of the Universe, the same in origin, progress,

and destiny ; death itself, in point of fact, a relative, not an absolute condition. The thing men call dead is periplastic only, a few degrees less alive. All the Laws of our Spiritual, Mental, and Physical Nature, and the truths of the Science of Anthropology, must surely be in the facts or phenomena of each department respectively, before they are either discovered or conceived by the Philosopher.

3. MENTAL VARIETIES ARE GREATER THAN THE BODILY VARIETIES OF MAN.—Yet Professor Huxley is teaching the British people—both orally and oracularly—and that, too, with an earnestness and a zeal worthy of a *better* cause, that a particle of jelly is capable of “*guiding*” physical forces into exquisite—and mathematically arranged structures, *i.e.* the highest faculties are but modifications of the lowest functions, from the Oceanic Hydrozoa through every classification of Animal Organization, from the lowest Mind to the highest Soul—Man included, and that the doctrine in Teleology is utterly “*absurd*,” which supposes that the organ of vision, for example, such as we find it in the human eye, or that of the Anthropoid Ape, was created, or made for the purpose of enabling the being possessing it, to *see* ! Such structures exhibit nothing more than the passing outcome of natural development from the accidentally exposed “*nerve*” of some primeval creature, during countless æons of geological ages. Physicists want millions of years for the *natural* manufacture of Men, from Animals, yet, in all three of the primary groups, Mollusca, Annulosa, and Vertebrata, there are species with beautifully developed organs of vision, involving the three great questions of anthropological inquiry ; viz., Faith, Science, and Philosophy,—science of the natural world, and its physical laws, faith in the existence of a future Life for Man, and the philosophy of eternal principles, involved in finite and infinite being, phenomenal forms of motion and mutation, manifesting the laws and forces which originate and govern various natures, through all the mighty commonwealth of things, anterior to sovereign Man, even in the Silurian period ; so that these splendid eyes in a vast chain of animal structure and function dispersed over the globe, must have existed *anteriorly* to the Solar System, *i.e.* without any light at all, if we are to credit this sort of scientific teaching, which rules by force of lawless Law.

4. The origin of Protoplasm is, itself, *extra-scientific*, in my opinion, a physical basis of Life without adequate cause within the range of Physical Induction—certainly, whenever Britain, as the British people, gives up the truths of Man’s Spiritual Nature, the seal of its Humanity will be broken, and the

“mark of the beast” will be upon it, both now and for ever. Yes, the soul of Man—though repudiated by Anthropologists—is the only deathless element of his nature and constitution, and will find no lasting rest in all its philosophical experiments and best scientific observations, until it returns from such *exclusive* physical researches, and learns to behold itself in God, and God in all things. The relations of Man to the Lower Animals form the prime objects, on the present occasion, as *materials* of method, and the proper contemplation of those relations is the indispensable condition of discussing them methodically. The following method is, I think, the leading thought, as an act of the Mind, which shall unite, and make many things—*one*; Man, himself, in the science of True Anthropology, the key-note of the harmonies of Physical Science, in relation to the higher sentiments of the genus Homo, no matter whether his skin be red, white, black, or yellow, or his geographical distribution denominated Caucasian, Mongolian, American, Ethiopian, Malay, or any of its subdivisions. All those departments of the Science of Man which deal with the *material* elements of Animal Organization, can only be adequately investigated, or successfully prosecuted by the scientific methods belonging to the Philosophy of Matter. The Psychological departments of Organic Nature, or Brain Protoplasm, can, in like manner, only be satisfactorily investigated by the method belonging to the Science of Mind. Equally *true* is it that the Moral and Religious elements, which belong to Man, and to Man only, of all created beings known to this sphere, not only indicate, by their very existence, a method of inquiry, and a kind of evidence distinct altogether from those on which we base our scientific knowledge of Physical and Psychical phenomena in animals; but, also, involve in their essential character, absolutely, that *immediate* relation which they enjoy to the Great Father of All, who, in his wisdom, rules all; not as the mere Pantheistic Spirit of the Universe, but as the Lord and giver of our world of Humanity, who is not only the God of Nature, but the Moral Governor of the Human Soul. Man, I say, stands *alone* in the History of the Earth and animated Nature, co-ordinated by specific endowments with the materiality of this planet, apart, entirely, from every other organic being; no vertebrate type *equals* him, either morphologically or teleologically. The specific character, as well as specific structure, physiological economy, and final purpose of an animal, however much resembling Man, either in mind or body, external or internal conformation, are, in my opinion, conditioned *fundamentally* in its exclusively immutable psychical principle, in

short, an animal, however anthropoid, is an organism, restricted to the manifestation of psychical and physical phenomena, the same in kind, though differing in degree, from generation to generation; there is no true mental progression in any known species.

5. The movement-spring of Anthropology is man's tendency to rise and fall. It is a vast Ethnical beat, or periodicity, from Civilization to Barbarism, and from barbarism to civilization once more—in the minutest acts of our minds is the same secret, logical, physical, metaphysical, as in the entire universe. Consciousness is the Science of Reason, and therefore the Science of Man, the very end of human existence, I think, is this—that in *each* Life, Mankind may, but will not, order all their relations—spiritual, mental, or physical—with Freedom, according to Reason. Man *is* an animal; but he is something more than Protoplasm; begotten of Spontaneous Generation and Natural Selection. From Soul to Spirit is a leap too great for Nature to accomplish. This fact of itself points out irrefragable considerations against the absolute reality of the “*identical*” structural gradation of the Human Race from Apes, according to mere exterior or interior resemblance, “*Ὅμοιος*” is not Idem, either in Science or Religion. Teleology is not a prudent virgin that weds Heaven, and consequently produces nothing for the World. In the present Gulstonian Lectures on “Body and Mind,” Metaphysicians seem classed as of the same order of philosophers as religious ascetics and maniacs! At least, Professor Maudsley says,—We shall make no progress towards a mental science if we begin by *depreciating* the body, not by *disdaining* it, as Metaphysicians, religious ascetics, and maniacs have done; still it may well be, as De Quincey surmised, the opening of the book at the Day of Judgment shall be the unfolding of the everlasting scroll of human memory (*Lancet*, Report). Obviously, therefore, the learned College-Professor does not himself choose to put off that which he cannot now make fit into the materialistic side of consciousness and organization. He carries us up his anatomical ladder, from gradation to gradation, aided mainly by Flourens’ Pigeon, higher and higher up to Man,—“the misinterpretation of whose mind constitutes what has *hitherto* (but, of course, no longer) claimed to be Mental Philosophy;” and having truly declared that Science cannot touch this question, he descends metaphysically, after all, from that physical review of Comparative Psychology. The distinctive character of Man, however pithecoïd, consists, *as a starting-point*, in the moral faculty of subordinating that same mental and physical organism to his exclusively human

spiritual principle; and to this same spiritual principle man owes, not alone the faculty of speech, but that *self-conscious* intelligence of right and wrong, in an ethical point of view, on which depends, not alone the genius of Intellectuality, whether in highest cultivation or lowest debasement, but his sense of responsibility to God—bestowed upon him for his eternal welfare here and hereafter—and that too in obedience to the fulfilment of a Divine purpose. This is Man's true place in Nature, and his *only* relations to the lower animals. The formation of a crystal, a plant, an animal, or a man, is, in their eyes as Anthropologists, an exclusively *mechanical* problem—degenerated anatomical characters of crania, in the different races of Men; *e.g.* dolichocephalic, prognathous, brachycephalic, orthognathous, round-headed, oval-headed, oblong-headed, micro-cephalic or *headless*, from the ethnological antipodes, differ in the same way only as do the skulls of lower mammals—as though the tender, the sweet, and the lovely, in the physical world, were bequeathed to us as a legacy of mere temporary and sensual delight, that had *no* anterior or superior truth, beauty, and purity, in the spiritual and eternal Nature of our Heavenly Father, which cause our hearts and minds to vibrate—yea, our very souls to tremble and yearn for closer intercourse with Him from Whom all science springs!

6. No crystal, plant, or animal yet known to Natural History, however complex or wonderful the mechanism, can enter the spiritual domain set forth in the words, *I think, I feel, I speak*. Self-consciousness alone infuses itself into *that* problem. However rough the human casket, the jewel is there. Show the soul, the grand distinguishing prerogative of Man, cultivate the mind, soften the heart, Christianize Humanity, and the *religiosity* of the beast-child, the boy-wolf, or, like Ignatius Sancho and Gustavus Vasa, born in a slave-ship, wakens them up into the refined citizens of London or Paris, and the literary as well as philosophical ornaments of modern Europe.

7. Bishop Hurd said of Lord Bolingbroke, that he was of that sect which, to avoid a more *odious* name, chose to distinguish itself by that of Naturalist. Yes, a Naturalist, two hundred years ago, was a persistent denier of *all* spiritual Truth, an exclusive believer in natural phenomena, an investigator of Nature and its Laws; and the word remains true to its etymology at this moment, the mode of origin of the different species of men, historically or pre-historically considered, and their development from mammiferous quadrupeds are identical in all respects with those of the apes. The human ovum tells the same story as that of any other vertebrate

animal,—lizard, snake, frog, or dog—and that, too, in every essential particular; nay, more, the science of Anthropology is but the physical history of animal vicissitudes in which Accident is the only design!

8. About the year 1670, *mental* action, both in Man and animals, was generally regarded as a mere function of the brain. The cerebral organ was then looked upon as a sort of gland, by which thoughts were secreted. The expression adopted by Professor Carl Vogt at the German Congress in 1869, viz. Thought is a secretion of Brain-Protoplasm, had its certain prototype in the ancient days, when ideas were physically estimated as things entirely “of the earth, earthy”—material substances, in fact, closely allied to the bile—the saliva, and the gastric juice. Free-will was but a kind of subtle matter, identical with the nervous framework of the human organism. It seems not to have occurred to these scientific materialists, that function implies an act in which material changes can be weighed, or measured; an act, moreover, in which Mind in Man and animals, is *in no wise* concerned. The clay design of the sceptic in 1670 is the very prototype of the statue afterwards executed in marble, AD. 1870.

9. In every part of our being—beyond the limits of humanity physical—there dwells Divinity above disputing. Mind everlasting *precedes* the Life of things material. Anthropologists have a strong love and deep conviction of the truth of beauty, but they are not guiltless of a partial abandonment of justice in denying the whole beauty of Truth. The science of Man, as it is commonly understood, represents, or rather aspires to represent, only the physical and mental aspects of Human Nature, that is to say—one set of interests, *exclusively*. Such Anthropologists aim to be the modern apostles of Naturalism, or Materialistic Philosophy. Man, like the Universe itself, arises out of modifications of matter, which are self-existent and self-directed; they repudiate the existence of Soul *utterly*, and regard the functions of Life, Sensation, and Thought as pertaining only to the domain of Natural History—on the contrary, I am of opinion, that True Anthropology cannot recognize special phenomena of one class only, but the whole history of the human constitution in its integrity—any other representation of the Science of Man is not *just* to eternal Truth; it is, in fact, neither more nor less than a retrogressive movement, repugnant, I hope, to the spirit of our age and nation. Such scientific principles, we know, abounded at the period of the French Revolution, and continued to agitate England for years—the religiosity of Man

was seared, as with burning steel,—“our fathers worshipped stocks and stones,” but our brethren worship flints and bones !

10. About that time, 1668, Dr. Cudworth published his principal work—“The true Intellectual System of the Universe,” as a philosophical refutation of the atheistical tenets then, as now, widely prevalent all over England ; then, as now, too, science of the exclusive and bigoted physical sort, was to effect the complete “*restoration*” of mankind—morally and permanently—there being *no* existence except the fleeting present ; natural knowledge was almost universally held to be the All in All—the “one thing needful,” for Mind and Body—from dust to dust was man’s only pilgrimage in 1670—his nature and constitution “*identical*” with those of animals, in origin, progress, and destiny—and from Protoplasm to Protoplasm is the highest and best march of science in 1870, the spiritual nobility of Manhood is gone, in substance and in structure, in organ or in function ; he is *one* with the brute—their common parents—Spontaneous Generation and Natural Selection : in other words, “Her Wound is incurable, for it is come unto Judah.” Flint and Bone teaching has resulted in the pretended discovery of a body “without a soul”—spiritual being has no *locus standi* in the modern science of Man, past, present, or future ; heroism requited with misery, religiosity without heart or hope, vice adorned with coronets, the nobility of virtue in chains, want, disease, violence, bloodshed, meet us everywhere ; the arm of science, withal, impotent and helpless to succour or to save—our creed—rationalism, the ape for an ancestor, man greater than his Maker, an earth without a Heaven, and a world without a God. Vanity of vanities is *this* science of sciences ; the aim of Anthropology was, and is, the *exclusive* aggrandisement of flesh and blood—its sure end is the grave, and its true epitaph, Ichabod, for where *is* the glory if it be not in shame ? Such scientific investigations are one-sided, and *ex-parte* men search for the *ego* when its habitation is desolate ; meanwhile, the *ego*, having escaped, they deny its existence ! “What man is there of you, whom, if his son ask bread, will he give him a stone ?” Anthropology in London, Paris, Vienna, and Madrid, has disdained to draw upon any department of true spiritual knowledge, which *could* throw more light on the subjects which it investigates. Although Jews, Greeks, Germans, Indians, were never wholly destitute of spiritual culture, Science deals in the swinish husks of physical phenomena alone, on which the soul of Man must *starve* and perish, for we shall never fly by feeding on birds, neither will worms ever speak by feeding on us—no possible amount of human brains will enable the grass on our

graves to *reason*. It is in passing from the region of scientific facts, to that of laws which govern the Human Mind, that Man can ever take his true position, either in the scale of Nature, or that of Spiritual Beings. Men of Science would have us believe nothing whatever in the philosophy of Mind, whether belonging to what they call the different *species* of men-mammalia, birds, reptiles, fishes, and so forth, beyond the *material* cause and effect—the physiological function of an anatomical organ. Hemispherical ganglia are now held to be the sole identical representatives of *ψυχή*, as well in the science of Anthropology as in that of Zoology; in fact, Anthropology is *Neo-Biology*, and would seem to imply little else than a knowledge of the science of animal Life, and the outward *forms* of Mankind; it explored the lowest depths of Superstition, and treats largely of idol-worship, as though Religion were but a *terrestrial Fungus—fetid and poisonous!*

11. Whatever the classification, in the midst of past or present organic remains, mind, according to some British and Foreign Anthropologists, is the attribute of Brain-Protoplasm only; in a word, their Science is *materialistic* in essence. Recent singular facts and coincidences appear to favour existing doctrines respecting the localization of the human intellectual faculties; but others, probably still more remarkable, are utterly opposed to them. It is quite certain that, in many of the lowest animals, no relation whatever can be discovered between astounding mental faculties and the physical conformation of their nervous systems, calculated, in any scientific way, to explain such psychical phenomena as wholly depend upon anatomical structure; indeed, were such material relations traced to particular parts in the Vertebrata, which has not yet been done, the same exegesis would by no means apply to the Invertebrate kingdom, even more singularly endowed with instinctive and rational faculties, and in which the central organs of the nervous system are represented, not by Brain-Protoplasm, but by slender cords, or ganglionic chains, which, as we advance in the scale of animals, become double, and traverse the body as ganglions; still Life and Mind do not seem to require even the aid of *this* nervous arrangement in some of the lower Zoophytes. Again, what *sort* of Man does Anthropology represent? Black women have white daughters, and white women have black sons; some are six-fingered, others are six-toed, with long ears, which they move like mules. Some have an excess of teeth, breasts, ears, together with other differences, internal as well as external. In addition to being born deaf, dumb, and blind, from age to age, endless varieties of formation are transmitted

and *perpetuated* for hundreds of years ; madness, even to the nightly howling and barking, like dogs ; hare-lip, &c. ; squinting ; “ horns ” and “ tails,” with spotted skins, covered from head to foot with long silky hairs, like those of *Pithecius Satyrus*, and of a reddish-brown colour, too ; club-foot, hunchback, and the gift of second sight ; physical and moral diversities, moreover, surpassing in extent those founded by the great families of ancient Rome ; some men have skins like the bark of a tree, whilst the common integument of others resembles the pachydermatous covering of the elephant, or rhinoceros, looking and rustling like the bristles of a hedgehog or the quills of a porcupine. Some are giants, whilst others are dwarfs. Many girls, not Welsh, fast for fifty days ; many boys sleep for a yet longer period. Some anthropological specimens live in the hollow of a stone, and subsist mostly upon dirt. Must we, therefore, deem it unequivocally true, that millions of years ago primeval man walked on all fours, and arrived at perfection by eating pipeclay ?

12. Animals exist without any central organ of the nervous system that can be either scientifically or truthfully called Brain, and yet are endowed with unequivocal mental phenomena. To such an extent is this the fact, that bodies may be divided into several distinct and independent portions, still each separate and detached part is capable of manifesting special will, special faculties, and special desires, even when the mental principle, which is certainly not of an exclusively material nature, has been divided and subdivided over and over again. Brain, ganglions, or nervous cords ; and what is more, even nervous matter diffused among the granulated bodies which form animal structure in some gelatinous zoophytes, afford no adequate solution of the scientific difficulty in which the advocates of an exclusive physical basis of Life and Mind find themselves, on *this* and many *other* occasions. Seeing these things are so, as a matter of incontestable fact, derived from philosophical experiments, after removing the cerebral hemispheres, and scientific observations upon animals yet lower in the scale of animated nature, how fare the statements of Professor Tyndall and others, so industriously circulated all over the kingdom, that Mind is known to Man “ *only* ” as dependent upon the Physics of the Brain, and that with this fact before him the infidel is secure in his position against all attacks ? Sensori-motor functions prove conclusively that Mind has *not* its only seat of action in the Brain itself ; the mental principle is assuredly divisible in Planaria, Polypi, and Annelida ; and, moreover, the Naïdes and Nereides propagate their species by *spontaneous* division. The truth

is, Mind, in these lower animals, is divisible, whether it be or be not *identical* with their vital principle :—

“ On Earth there is nothing great but Man,
In Man there is nothing great but Mind.”

13. The Spirit of Man is a special creation, capable of union either with God or the Devil. The Anthropologists, of these our days, found societies in London, Paris, Madrid, and Vienna, for the maintenance and propagation only of their own exclusive Physical History of The Human Species. It is held to be no part of True Anthropology to admit the existence of a Religious and Moral Nature in the souls of Mankind at large, the world over, upon any *kind* of testimony, however irrefragable, whether it be called Spiritual, Mental, or Physical. In *their* science of Man, Religion, itself, is mere systematic idolatry and sordid priestcraft. Mythology, and Tradition, Hindu or Christian, the Rig-Veda Sanhita is as truly spiritual or heavenly as the Hebrew Scriptures, and O-Kee-Pa, as an “inspired” ceremony of the Mandans, equal in value to either of the sacraments of the Church of England. Idolatrous worship in India may be taught and illustrated in Essays, Papers, and Lectures of singular “beauty” and profound importance, but the fairest Advocates of demonstrative Religiosity, true in sentiment and fact, in principle or practice, in proving the spiritual realities of the Universal Heart and Consciousness in every variety of the Human Race, are held only to “*assume*” the real in Man, historically and pre-historically. These *necessary* truths, as I conceive them to be, are held not to partake of the Absolute; the inscription of Aristotle, τὰ μετὰ τὰ φυσικά, is altogether untrue. Surely there *is* some distinction to be drawn between Israel purified and Israel disgraced; equally certain is it, in my judgment, that there exists as wide a gulf between true and false Religion as there is between light and darkness, or good and evil. The Science of Man, to be worthy of its high and noble calling, must include Human Nature, as we find it, in every geographical distribution of the genus Homo; whether found in the drawing-room of an Emperor’s palace or in the natural caverns of Bruniquel, during the Rein-deer period; the wild pithecoïd races of North-Western Europe, spoken of by Latin writers, or the members of the Victoria Institute. Absolute inequality of Neshamah is not demonstrable by Physical characteristics. “To do justly, and to love mercy, and to walk humbly with thy God,” is *no* part of the modern Science of Man; but the utter prostitution of our Spiritual Nature, originating in,

and perpetuated by, the direst superstition, IS officially recognized and duly approved, as an essential ingredient of the best quality, if not the highest form of True Anthropology, "fables false as Hell yet deemed oracular."* Why is the Religion of the *Heart* ignored, as a duty to God, whether we speak of the Greek, Hindu, Jewish, Christian, or Mohammedan *Faith*?

14. Is such the rational Logic of Intellectual Philosophy? At all events, I am of opinion, as I have ever been, that the Science of Man, in the broad and catholic sense of that comprehensive and generic term, *must* include every department of Human Nature, whether regarded as pure or impure, mental or physical, moral or spiritual, or, whatever the "*science*" may consist of, there will not be much true knowledge of Man. The superstitious part of recent Anthropology was assuredly known to Ezekiel; and was he not the son of Buzi, and descendant of Aaron, when, carried away captive to Babylon 2,467 years before they were so *gratefully* appreciated, either by the British Association for the Advancement of Science or the German Congress of Physicians and Natural Philosophers? Yes, and were witheringly denounced by him as a morbid perversion of that which is holy and good, sublime, beautiful, and true in the nature and constitution of the human soul; he "caused Jerusalem to know her abominations," and that, too, in language of such bold, vehement, and tragic dignity, in a gorgeous and majestic style of rich oriental splendour, as will never be equalled by all the Anthropologists of Christendom, Jew or Gentile, to the end of time. Such is the protoplasm of Spirit! This is the true life in Man; it cannot be *seen*, but it can be *felt*. Life springs from Life in the spiritual as much as in the mental and physical world, and no scientific or philosophical experiments have yet proved that germinal Matter, which has never lived, has still been *seen* passing into vitality. The Human Soul is real, though alike invisible and intangible. The Crania of the *ancient* Races of Men were the same as those of A.D. 1870. The objects we have to deal with when we are reflecting on or studying the science of Mind, and, therefore, the science of Man, are in absolute *contrast* with those we are investigating when we are scientifically observing visible and tangible things, or experimenting amid Brains and Bones. The former are, from their very spiritual nature and divine

* Existing savages, in my opinion, are the degenerate offshoots of more civilized races, at least we have no adequate proofs that different communities *have* raised themselves, unaided, from the lowest to the highest forms of civilization. The Bushmen of Papua do not evolve Humboldts, Shaksperes, or St. Augustines.

constitution, wholly unextended, and have *no* temporal solidity, either for our hands to grasp or retain, as aëriform bodies, in space. The latter are solid and useful occupants of places in *time*.

15. The issue is this. All true Anthropology has not only a moral origin, but a moral tendency, and I submit, with becoming deference, that no Anthropologist, in the present state of Science, is justified in being so dogmatically *exclusive*. However much he may be "distinguished" for his knowledge of strange peculiarities, observed by religious Moscovites, called Scoptsis, or the physical characteristics of ancient organic remains—force and matter—the plurality of the Human Race—the mythological tales of savage Africa—of the Esquimaux of Greenland, or the lacustrine habitations of "primeval" Man—anti-missionary labours—pre-historic hut-circles—shell-mounds—tumuli—the phenomena of hybridity in the genus *Homo*—the Negro's place in Jamaica, or elsewhere—"religious" faiths, embodied in ancient names—*artificial* deformities of crania, heredity—inequality—cerebral physiology, or materialism—in short, he may know thoroughly well the whole anthropology of primitive peoples, however scientifically distinguished in all this one-sided lore, I repeat, he is acquainted only with Man in his physical and mental aspects. Wisdom abideth not in *them*; he cannot thus ascertain his true place in Nature, or his true relations to inferior forms of Life and Mind. No amount of patient investigation, careful induction, or encouragement of scientific researches, will ever establish a *de facto* knowledge of Man—that is, Man as he is—the world over, in every geographical distribution and variety. And why? Because the Anthropologist in question has gratuitously and erroneously adopted a vicious, mutilated, and completely *deformed* method. The soul of Man speaks all Languages, and in all nations; but its nature or constitution is purely spiritual. In physical history man is closely allied to animals, both in flesh and blood; and with them he enjoys, somewhat in common, both mental and bodily phenomena. Every tissue and function of his structural organization may not only be strictly homologous, but likewise compounded of the chemical and physical forces of the Universe. Still, the being who is the subject or object of all these inquiries in natural history is at the end thereof discovered to be an organism "without a soul." An organic being, therefore, "without a soul" is *less* than Man—he is a beast; and his science is Zoology, and not Anthropology at all.

16. Viewed in the exclusive light of Physical Science,

the distinctions between Plant, Animal, and Man almost merge into perfect *identity*; for example, the Amœba is a shapeless mass of irritable Protoplasm apparently devoid of all organs; yet it is an animal creature, eating without a stomach, moving without muscles and without limbs, feeling without nerves, breathing without lungs, and nourished without blood. There are also creatures, equally shapeless, composed of structureless protoplasm, alike irritable by virtue of their power to feel and move. Dr. Kühne, of Leipsic, has already built them up into *vegetable* muscles, and can make them lift a weight, as though in grateful acknowledgment of their sensibility in feeling a galvanic shock; so that Plants, like Animals, move and feel; and in both the cycle of Life comes round to a small dot in the ovule of the one, as in the ovum of the other. Still the life-story of the green-pond scum is *not* that of the grain of wheat; neither is the heart of a fungus that of a man. Spirit, Mind, and Matter are not all identical; for if in the world of materiality the human body, like other bodies, is built up of protoplasm, there is yet a world of Intellect, where all is mind to mind, as there is just as certainly a kingdom of spirits, where all is spirit to spirit. Identification of the human skull with the spinal vertebræ of Apes does not account for Pure Reason: Thought and Religiosity in the soul of the former, and their significant absence in the brains of the latter. Protoplasm may, in short, be even "the moving creature that hath life;" but it was not for that *physical* basis of Man that Christianity was actually founded upon the grave of the risen Saviour. His spiritual kingdom "is not of this world," and is wholly independent of all the Races and Nations—both now and for ever. Surely the *quid est* of spirit, whatever can be predicated thereof, as either descriptively or historically true, belongs properly to Spiritual Philosophy. The *quid est* of Mind belongs to Mental Science, just in the same way as the *quid est*, or what it is, of matter belongs to Physical Science. These sciences are wholly distinct from each other, yet have their respective *truthful* foundations in the nature and constitution of Man himself. No wonder, therefore, that the exclusive Materialist, in such one-sided circumstances, should discover only a *beast* origin for Man, and that vital and mental phenomena are but physical and chemical phenomena, and that all living organic beings, Man himself included, are comprised in one word—Protoplasm.

17. Sometimes we meet with Professors of Science who are highly original in their suggestions, but singularly loose in verifying them. Metaphysicians are said to "*assume*" the truth of everything, and to prove nothing; yet Materialists might

themselves have the benefit of this compliment. We are now told fortnightly, with an *extra* review on Saturdays, that Memory exists in every organic element of the human body, and that Nature leaves scars on our fingers, for example, in "*remembrance*" of the injuries she has sustained, and vindictively refuses to deposit normal tissue! "*We*" may forget external or internal disease, but "*it*" will not forget "*us*"! Possibly, therefore, every other organic structure has its book of remembrances; if so, what will betide the bald-pated Philosophers? Organic registrations must be countless. It is not easy to admit these "arguments" to be incontrovertible reasons. Who or what, *inter alia*, is the "*it*" which will not forget "*us*"?—(Vide *Lancet*, March 26th, 1870, "On the Relations of Body and Mind," by Professor Maudsley.) It is the old, old story, that Life and Thought in Mankind at large are but mechanical products of molecular machinery. It results from the Professor's considerations, that there is no special faculty of memory; *ergo*, almost every possible act of the human mind, according to this sort of logic, is neither more nor less than memory. No idea is ever lost, it is reduced to equilibrium, and when latent is rendered active by Association. The anatomy of Man, we are further assured, under the heading of "*academical*" Science and Philosophy, is like a steam-engine with the fire out, and nothing in the boiler; but the body of living Man is a beautifully-formed machine, made up of those molecular properties, which, it is no less certain, once lay with the world itself, potentially, in cosmic vapour! In other words, vital movements are mechanical movements, and mechanical movements are vital movements.

18. The Science of Anthropology, as now taught, is neither more nor less than unmitigated Materialism—our most spiritual states are "*but*" physical and chemical processes. Every fact of human consciousness, whether in the domain of Thought, Sensation, or Emotion, is "*but*" the corresponding result of a certain definite "*molecular*" condition of the cerebral organ; *i.e.*, given the molecular state of the brain, the corresponding thought may be scientifically inferred. The growth of the animal body is "*mechanical*," says Professor Tyndall, and Thought, as exercised by man, has its correlative in the physics of Brain, and the materialist will be able *finally* to maintain this scientific position against all attacks! By the modification of pithecoïd form, Man has probably become what he is, says Professor Huxley. The "*most*" ancient Races of Men, we are assured, fashioned flint axes, and flint knives, and bone skewers of the same pattern as those fabricated by the "*lowest*" savages at the present day, and the

habits and modes of living of men have remained the "same" from the time of the Mammoth and the tichorhin Rhinoceros "till now"! The scientific crown, therefore, awaits the Anthropologist, who shall yet have the good fortune to discover, in still older strata, the fossilized bones of an Ape more anthropoid or a Man more pithecoïd, with the possible epitaph, Here lie the mortal remains of the Intermediate Vertebrates! Physical conditions do *not* account for organized intellectual *differences* from the *same* cell. In a recent course of "Lectures on Man," I have taught that there exist the strongest reasons for establishing a close anatomical and physiological similitude of structure and function between *Homo Sapiens* and the Anthropoid Mammalia, *e.g.*, as with no other vertebrates, the optic nerves open directly in the cerebral hemispheres; hence man and ape perceive their sensations alike, but there is no *identity* in Nature; *i.e.*, I acknowledge an Ideal Series between Types, but not a Lineal Series physically.

19. Nations rise and fall, yet there are Races which certainly were never Savages. Whatever may be said about the past physical History of Mankind, in regard to skulls, worked stones, tumuli, caverns, flints, and bones, Race-Legislation, mythology, superstitions, idolatrous worship, or comparison of man with the lower animals, as being the *essentials* of modern Anthropology, which, by the way, is defined by *la Soc. d'Anthropologie*, Paris, as "the scientific study of the Races of Men," Religion *must* be duly considered in every true Science of Man, and not superstition merely. Religion, in my opinion, cannot be scientifically ignored by any Anthropological Society, British or Foreign, *unless Man himself be excluded*. Religiosity is the anthropological character; even the psychological characters of the different races cannot be adequately investigated without discovering the inexorable influence of monotheism, or polytheism, upon them. That Man is diverse in *origin*, and diverse in *kind*, and derived naturally from lower animals, is, like the statement that Brain originates Mind and Thought, a *molecular* phenomenon, an hypothesis in each case as old as Philosophy itself. These theories have their day, are forgotten, as in 1670, and revived in 1870. Their authors are usually men of large intellects but small hearts. Did time permit, I could demonstrate almost every *recent* theory, now so assiduously propagated as "Science of Man," in the *ancient* speculations of former Materialists throughout the History of Philosophy, from the Ape origin of Man to primordial utricles, molecular machinery included, or with the conditions reversed, withal the scientific infidel stands but very insecurely, on a broken leg, and sandy foundation; for, supposing it "*proved*,"

which has not yet been done, that every living being had its physical basis in the same cell or the same nucleus, protoplasm, the all-in-all, Experiments in Physics are inconclusive, because new consequents demand new antecedents, spiritual Philosophy enables its faithful and devoted Alumni to look and smile on the raging tempests of modern science, with all its fussy and evanescent Eureka's, well knowing as they *do* that the true *cause* of the variety of Classes, Families, Genera, and Species of Man, Animal, or Plant, resides NOT in the physical and chemical phenomena of the germ, or Life-matter, but in the Divine Idea, or Nature, "after their kind," implanted in each, when *conditioned* fundamentally, that is "In beginning," at its special creation by God, בְּרֵאשִׁית, who is "the same, yesterday, to-day, and for

ever." Natural Science *must* be considered philosophically. Man is endowed with a spiritual nature, or moral faculty, wholly independent of the material Life which he has in common with the rest of creation.

20. Recent writers on the physiology of Matter are entirely mistaken, I submit, in viewing the brain, spinal cord, or sensory ganglia, as exclusive agents in all intellectual and mental processes, of whatever kind. I do not believe that impressions or ideas are absolutely dependent upon the physics or chemistry of nervous centres. The simple operation of Will is certainly exempt, in numerous animals, from any such fettered connexion with material processes, and as regards the immediate dependence of the human soul upon the organized structure of Brain-Protoplasm, it is independently active, rather than physically acted upon; its association with ganglionic nuclei of the senses is often both circumscribed and partial; in fact, the anatomical basis of Thought is but a temporary instrument subserving spiritual functions. The nature of mind no physical science is competent to interpret or explain. Time after time the light of speculation at the College of Physicians has left one landscape to shine briefly upon another, always darkened by deepest shadows, like giant forms of vanities on their way to hopeless ruin—*Œdipo conjectore opus est*. The proper study of mankind, by which I understand its synonymic expression, True Anthropology, implies an adequate knowledge of the spiritual, mental, and physical history of the whole human race, whether sacred or profane. *Homo sapiens* I interpret to signify a deathless spirit, clad in organization, and, therefore, adapted divinely to the materiality of this planet, "to replenish the earth and subdue it." Man is the incarnation

of Thought, and the protoplasm of the elementary tissues of his temporary physical organization, ganglionic, sensory, or motor, is no more the *man himself* than were these stones, when in the quarry, the building in which we are now assembled. The history of humanity is an involution of carbon, hydrogen, oxygen, and nitrogen, together with something more struck into spirit! Every organ and function of *T. Gorilla* may be strictly homologous with those of *Homo sapiens*—still Man is not *of* the brute scientifically. I resist the conclusions of modern Anthropologists as utterly undemonstrable—that the natural history of the human race, and that of Anthropoid Mammalia, is alike in Protoplasm, and therefore “*identical*” in faculty of Nature. Neither Tyndall nor Darwin—with Huxley and Maudsley to boot—whether molecularists or naturalists, are able even now, in the year 1870, to level up the difference between Organic and Inorganic, or between genera and genera, species and species; scientific differences yet *persist*; a natural growth from the moss to the monkey, excludes Man, the deathless, from its involution, for he is, as I have said, the incarnation of Thought, founded in the Divine Idea, and therefore independent of Natural Selection—terrestrially, morphologically, or teleologically—yes, Spirituality is the essential *gage* in true Anthropometry, and is not the exclusive offspring of chemical force or material substance. Religiosity *is* the ultimate fact of Human, as contradistinguished from Animal Organism, dependent upon no *ex-parte* physical basis, but as the bright gem in the crown of Human Life it scatters the dark and gloomy perplexities that cloud our earthly horizon, by whose native splendour, wrapt in a glory all its own, we are enabled to read that the writing of God, in the Book of Revelation, holds the same language of Truth as the writing, not less His, in the Book of Nature, for it shines on “the path of the just as the shining light that shineth more and more unto the perfect day.” Physico-Zoic, or Pneumatico-Zoic,—these things, in all Race-Amalgamation, are Cause and Effect; therefore we have spiritual phenomena no less certain than those of Physics:—

“I argue not

Against Heaven’s hand or will, nor bate a jot
Of heart or hope, but still bear up, and steer
Right onwards.”

21. Lastly, Justice to Truth constrains me to recapitulate—True Anthropology is the *synonymic* of Physical Researches into the history of our species, and the Spirit-

tual, Mental, and Material Constitution of Man, *fairly represented*. The I feel, I think, I speak, is not only the chief gateway into the Temple of Science, but is the entire intellectual basis of Physical and Metaphysical, Moral and Religious Knowledge. Were all the Orangs and the Gibbons, the Chimpanzees and Gorillas, collected together, and put into *one* being, they can neither constitute Humanity proper, nor the Neshamah of lives, for the true root of Animated Nature is in the Supersensible and Divine—past, present, and to come. The conclusions of necessary and demonstrated Truths are not mere optional scientific *opinions*, to be embraced or not, as Anthropologists please; they are insuperable necessities of Thinking, to understand and appreciate which is to assent to them. They appeal not to the feelings of men, but exclusively to their catholic Reason. If Anthropology is to include *Man*, it must not exclude the history of his *Spiritual* Constitution. Whilst acknowledging that there is a period of development, when the entire organism of every living thing consists of a particle of jelly, throughout each classification of the Animal and Vegetable Kingdoms,—of one molecule of clear, transparent, structureless matter,—whether destined to be Plant, Mammal, or Man, a centre of force capable of moving in all directions, which undergoes Division and Sub-division as it grows; and while in all these material things most wonderful chemical and physical living changes occur, let us never forget that there are altogether other astounding actions which constitute the matchless *difference* in nature or kind—actions as essential as they are peculiar to each *different* Life and Mind, quite of an immaterial eventuation, and capable of overcoming, by the Will of God, in the Constitution of Man all such physical and chemical attractions of Force or Matter; this—the spirituality of each one's real innermost being is the touchstone of Humanity, and is neither deprived of its being nor its active reality by the death of Protoplasm. In short, Truths — Spiritual, Mental, and Physical—are each and all exhibited to our view by the light of their own evidence, even as “one star differeth from another star in glory.”

The CHAIRMAN.—I have now to propose a vote of thanks to the author of the paper which has just been read, and I have no doubt that you will all cordially concur in this proposition. (Hear.) It is very much to be regretted that he is not able to be present, because, as I have already said, the paper is one of a somewhat peculiar character, and although I do not anticipate that there will be any difference of opinion amongst us with respect to the author's conclusions, yet I think it not unlikely that there may be some pas-

sages as to the precise meaning of which many of us may require a little enlightenment. I shall be glad to hear any remarks from those present, not only the members of the Institute, but also the strangers who have been invited here. The paper certainly opens up a wide field, but I do not suppose any one in this society will assert that the spiritual nature of man ought to be excluded from true anthropology, nor have I heard that the anthropologists of London, or, so far as I am acquainted with them, of Paris, deny this.

Rev. C. A. Row.—I wish you would interpret some portions of the paper which I find very great difficulty in understanding.

The CHAIRMAN.—I think it ought to be for you to state where the difficulties lie, and we shall be able to see what they are.

Dr. DENDY.—As you have invited those who are here as visitors as well as members of the society to join in the discussion, and as time is valuable, I rise in order to break silence and in the hope that I may induce some one else to follow. I believe that the reason discussion has been a little suspended is because the paper is so comprehensive that it is almost impossible to take hold of one single sentence among so many. If I understand the author aright—for with all due praise for the beauty of his paper I must confess that it is almost impossible to understand whether he is a true anthropologist or a false one—his idea is that there is an endowment superadded to structure, an endowment which he calls spirit, or soul, which is manifested to our senses, communicated through one individual to another, and without the intermediate matter of which the brain is composed. Now this appears to me to be an utter impossibility, unless we are to say that all human intellect is inspiration—special inspiration from the Deity,—and that, I think, neither you, Sir, nor the false anthropologists who are alluded to by the author of the paper, would agree to. That the brain is the organ of the mind there cannot, in my opinion, be the slightest question. Then we must ask whether the mind is an immortal spirit, whether the soul is mind unfettered by matter, and the mind soul combined with matter? There is the great question. Now, if you ask me whether mind can be manifested without matter I should decidedly say, “no.” What do we see in the senses? Probably this is a little material, for I am about to refer to the organ of vision. The eye does not see: it is not the eye itself that sees. The truth is that a ray of light passes through the cornea to the retina, where it is inverted, but we know that if we divide the optic nerve just behind the retina, and all the rays of light in the world were to be concentrated upon the retina, there would be no sensation such as we call vision; and therefore it is not the organ of vision—it is not the eye—that sees, but it is something else. Well, what is that something else? Here is an impression of the object upon the retina, and that impression is carried into the brain by the nerve which performs that function, and then we have the sensation of sight. Now, I believe that the sensation of sight, the faculty of vision, is one of the elements of the mind, and therefore we can scarcely admit that any immortal spirit is concerned in producing the impression. In my opinion there is an endowment,

—my opinion is made up upon that point; but that that endowment is in an inert condition unless through the manifestation of matter. Of course we must not venture to allude to the state of the immortal spirit after death: that is quite another question; but during life, as regards the manifestation of all our faculties, there is no question about what organization is concerned in that manifestation. We know that certain impressions made upon the mind will produce sickness. The receipt of unfortunate news, the witnessing of an operation—in the case of a person unaccustomed to such sights—will produce instant nausea and vomiting; but that is sympathy, and has nothing to do with the original impression made upon the mind—it is the sympathy of one organ with another. I think it will be right both for anthropologists and the philosophers of the Victoria Institute to try and come to some determination with regard to definitions, for I am quite sure that the great reason why we all differ so much from Professors Huxley and Owen, and Carl Vogt, is to some extent to be explained thus. If we were to come to a true definition of what we mean, so that we could say “If you mean so and so I agree with you, but if you do not I do not agree with you,” we should get on much better. I think that the want of proper definitions is a great stumbling-block to our understanding each other. I have ventured to make these few observations hoping that they may promote discussion, and I have only to add that I would be much happier to be a listener than a speaker.

The CHAIRMAN.—I am sure we are much obliged to you for having spoken; but perhaps it may be desirable to supplement what you have said, so as to put it more definitely. I do not think the author of this paper would deny that the spirit is connected with the physical nature of man, whether it be the brain or any other part: the question he argues more particularly is as against those anthropologists who deny the spirit altogether. Your contention is, that the immaterial is concerned with the physical.

Dr. DENDY.—I confess my perfect belief in an endowment, but then I ask how is that endowment carried on with regard to its communication from one mind to another? This is the great question. Is it carried on spiritually as an immaterial substance, or is it carried on to the brain of another, an impression being made upon that brain, the one introducing its own spirit and not influenced by the spirit of the other? That is, I think, the great question which we have to consider, and I think that its solution would determine the matter at once.

The CHAIRMAN.—There is no doubt that your remarks are conveyed to my mind, not physically in any way, but entirely as a mental operation, except that you express your meaning by means of the body: you create a sound in the air which affects my mind—affects the immaterial, as far as I understand the subject. At least I should be inclined to argue that it is so.

Dr. DENDY.—My sentiments are introduced into your mind as follows. My words or syllables undulate the air, and that air so undulated acts upon the ear, through which you are enabled to understand what I mean. The

sounds are conveyed to the brain, but is the brain acted upon by the inspiration of the soul?—for I grant there is an endowment,—or is it enabled to look at material things itself being a spiritual element?

Dr. HAUGHTON.—If the author of the paper were here, I would be glad to ask him whether he speaks his own sentiments or endeavours to convey to us those of the anthropologists whom he condemns? In the second section I find this sentence: "Nature, in man and animals, like everything in us and about us, is a chaos, without method." That certainly surprises me very much, if it be intended as a statement of the author's own views.

The CHAIRMAN.—That is not intended for the author's own opinion. In fact throughout the first two sections he alludes to the opinions of others.

Dr. HAUGHTON.—But there is a scientific question which bears somewhat on the actual opinions held by Dr. Hitchman, upon which I have a word to say. If you look at the second section again, you will find that he says: "Professor Huxley, like Dr. Carl Vogt, sneers at the idea of spirit or vitality, yet is ready enough to admit the existence of a '*subtle influence*,' even in the essential operations of protoplasm considered as the physical basis of life and mind in animated nature." Now, you will notice that here he makes the words "spirit" and "vitality" interchangeable synonyms, and at the tenth section you will see it stated—"Even when the mental principle, which is certainly not of an exclusively material nature, has been divided and subdivided over and over again"; and then in another passage,—“The truth is, mind in these lower animals is divisible, whether it be or be not identical with their vital principle.” Now, here you have spirit and vitality made synonymous in the second section, while in the tenth you have the mental principle, which I presume is in the lower animals the only spirit they can possibly possess, declared to be divisible over and over again. It is certainly a new thing to me that any kind of spirit is capable of being divided and subdivided; that is not my idea as regards spirit. I can understand matter being divisible, but I cannot understand this as being the case with spirit. The only way in which such a condition can be connected with mind is by supposing that the mind itself is the manifestation of material organization. If he takes that view—(A VOICE.—“That is his view apparently; mind and spirit with him appear to be different things.”) Well, he takes the view that the mind can be divided over and over again. That I must repeat is a thing which I cannot conceive. I can understand that the mental operations in the lower animals may be supposed to be dependent upon the physical organization, and that if the physical organization is divided, such mental operations as they may be supposed to have may be manifested in two or three different ways; but how the mental can be “divided,”—how spirit can be divided,—is a thing which I confess I cannot imagine. Nor do I admit that “spirit” is a word that should be used as synonymous with “vitality.” I think that the idea in the author's mind is the old notion of what was called the “vital principle,” by which everything going on in the body

which was otherwise incomprehensible used to be explained. Whenever the statement was made that there was a vital principle, that was supposed to be a sufficient explanation of anything complicated or abstruse which happened to be going on in the body ; but I think I may say on the part of most of those who have made physiology their study, that they have given up this kind of argument altogether, and that they now consider it rather a hindrance to science to speak of the vital principle as explaining everything which goes on in the body, and as being the immediate cause of any forces or operations in its physical structure. In fact this notion is now regarded as being as great a hindrance to the progress of physiology as in another case was the old idea of the abhorrence of a vacuum as explaining the pressure of the atmosphere. The old notion of physical science was, that "nature abhors a vacuum" : therefore, water rises in the pump ; therefore when you use an air-pump the tendency is to fill up a vacuum." But the phrase was one that conveyed no true idea : it explained nothing. Whatever views people may have, they ought, when discussing scientific questions, to use fixed and determinative phrases, and not to put forward mere words as though they were satisfactory explanations of scientific phenomena. I trust that the few remarks I have made will lead others to express their opinions *pro* or *con.*, as to the different points raised by the learned Doctor.

Rev. Sir W. TILSON MARSH.—I should like to make one or two observations on this paper, which has evidently been written by a man of large information, but who has not given himself time enough to clearly explain his meaning in certain passages. I think that what we shall all agree with him upon is, that there is in the first instance ground upon which we can stand with the materialists,—and it is always well at the outset to ascertain the point or points on which we are agreed with our opponents.—We can stand upon this ground with the materialists, that we all agree that there is such a thing as matter. Our bodies are specimens of matter ; but then we go on to a further question whither the materialists do not follow us ; namely, that there is in man something beside and superior to matter. Now, I confess that in considering this question, when listening to my friend Professor Tyndall, whose intellect I hold in great admiration, and to others advocating his views, I never can get beyond the astute philosophical reasoning of Descartes when he said, "*Cogito, ergo sum.*" I think that those who will examine this short enthymeme will agree that it contains pretty nearly all that can be assumed, independently of divine revelation :—"I think, *therefore* I am." This is the characteristic of man which distinguishes him from all other material creation. Man alone can say, "*Cogito, ergo sum.*" He is a distinct and isolated being, altogether apart from the matter upon which the "I" acts. Granting that there is something within the material which is distinct in itself—and who can deny this ?—will any well-read philosopher deny it ? I certainly think I never could bring Professor Tyndall to any other conclusion than to agree with me upon the point "*Cogito, ergo sum.*" Granting this, is there anything more in man than that, which distinguishes him from the rest of the material creation ? Here I think we must apply ourselves

to the divine revelation. We must take that as our groundwork and see whether it is consistent with the facts which we see around us. In divine revelation we find that man is defined as a triple creature, a triple being, a trinity in himself; and I think if we look at the facts around us we shall see that they are consistent with this definition. The trinity referred to is composed of the *σῶμα*, or body, upon which we are all agreed; the *ψυχὴ*, or soul, which man has in common with all the rational animals; and added to this there is the *πνεῦμα*, or the immortal part, which distinguishes man from all other rational animals. I think that if the writer of this able paper had taken into consideration this definition, it would have tended to resolve the difficulties which seem to have oppressed him; for obviously there are certain things which cannot be accounted for by the *πνεῦμα* without the *ψυχὴ*, and there are certain facts which cannot be accounted for by the *ψυχὴ* without the *πνεῦμα*. It has pleased the Divine Being to create man thus as a trinity, the *πνεῦμα* being peculiar to man in this material state. His body has been created for this very purpose, and it is described as *σῶμα ψυχικόν*, that is to say, a body of a soul character, and when it passes as renewed into the state beyond the grave it becomes *σῶμα πνευματικόν*, or a body spiritual. If we look upon man as composed simply of body and soul, there are very great difficulties indeed in understanding the facts which we see around us; but assuming for the moment the truth of the divine revelation (because we are not supposed to reason upon that alone), assuming that man is a triple being, a trinity, then I confess it seems to me that all the facts I have heard alleged by every class of philosophers will be met and accounted for. The *σῶμα*, or the material being, is one most intimately connected in the present world with the *πνεῦμα*, or spiritual portion, and I believe that that spiritual connection is combined through the *ψυχὴ*, but that at his death possibly the *ψυχὴ* disappears, and the *πνεῦμα* passes into a state in which the *ψυχὴ* perhaps will be re-created when the *σῶμα* is brought out in its perfection in the eternal world; but it is the passing away of the *ψυχὴ* which dissolves the connection between the *πνεῦμα*, or the spiritual portion, and the *σῶμα*, or material portion. Now, all the characteristics we have in common with the animal world will be explained by the existence of the *ψυχὴ*, or the intermediate portion of man. Our affections, our passions, all the lower feelings of our nature which we have in common with the dog and other animals, are all explicable in this way. We are apt to use the word soul rather unphilosophically; it is not the true word that should be used to signify what it is usually employed to express: "spirit" is the word we ought to use to express the immortal part, which part is not exhibited in any other material being in the whole known visible world except in man himself. Our thoughts—the "I," the "I think"—all come from the *πνεῦμα*, passing through the *ψυχὴ* to the *σῶμα*, whence they come forth in words and acts. I believe that this is the idea in the mind of the writer of the paper we are discussing, but I do not think that he sees the definition clearly. He says, in the sixteenth section, "The *quid est* of mind belongs to mental science, just in the same way as the *quid est*, or what it is, of matter belongs to physical science. These sciences are wholly distinct

from each other, yet have their respective truthful foundations in the nature and constitution of man himself."

The CHAIRMAN.—But he also says in another place there is the "quiet state of spirit."

Sir TILSON MARSH.—Well, allowing that, which I am glad you have pointed out, we grant all that need be allowed. God is infinite spirit, and in giving us the breath of life He has imparted to us a portion of Himself, thus creating our immortality, which can never pass away. Therefore I think that in this respect you and I are distinct from any being whatsoever, except the angel world, which we have not yet seen,—distinct from all the material beings around us in the possession of that portion of the Divine Spirit, the *πνεῦμα*, for which, of course, we become responsible. United with this is the *ψυχή*, which has also been given to the whole animal world, over which we have control, as being inferior to ourselves, and we have also the *σῶμα*, or body, which likewise belongs to the animal world. If you will only look at this argument and examine the various facts which have been brought out by philosophers, I think you will see that it meets their arguments: they cannot get over the fact that there is the "cogito, ergo sum," which remains in its full vigour,—oftentimes when the material form is decaying and dying away. Those who are clergymen, or medical men, have often been by the bedsides of dying persons and seen how, when the bodily powers are decaying the "I" which thinks, the immortal spirit within, remains as clear and powerful as ever—nay, sometimes even more powerful. (Hear, hear.) This fact distinguishes us from all other animals, and this being so, we argue that it is not sufficient to look at the external world; we say that, although cordially agreeing with many of the statements made by the materialistic philosophers, we think they stop short of what they ought to arrive at, and that they ought to go on and account for the phenomena of spirit, for the psychological phenomena which we assert can only be accounted for by the existence of that independent, individual, isolated "I" which resides within us. Then we come to divine revelation and say this is exactly what is stated to us by God in His word, and it meets and satisfies every argument drawn from what we see around us.

Rev. R. W. GREAVES.—May I ask if you consider that the reason is part of the *ψυχή*?

Sir TILSON MARSH.—Whatever there is instinctive in man, is, I believe, part of the *ψυχή*: whatever is rational is part of the *πνεῦμα*.

Mr. GREAVES.—The purely logical faculty of man, where do you place that?

Sir TILSON MARSH.—In the *πνεῦμα*.

Mr. GREAVES.—Then you do not look upon the *ψυχή* as inspiration?

Sir TILSON MARSH.—I look upon it as distinct from reason, which evidently is progressive, and can be cultivated to any degree. This is the peculiar faculty of the *πνεῦμα*, as I apprehend.

Mr. GREAVES.—You admit that a man is sinful by nature, *πνεῦμα*, *ψυχή*, and *σῶμα*?

Sir TILSON MARSH.—Yes ; the whole of man.

Mr. GREAVES.—And yet you say he is part of God.

Sir TILSON MARSH.—Yes, I believe the *πνεῦμα* to be derived from God ; but it is quite possible that the *πνεῦμα* may be given to man by τὸ Πνεῦμα ἅγιον, the Holy Spirit, but limited and finite in character as compared with the Unbounded Spirit, and liable to evil, which God cannot be.

Dr. DENDY.—Which is it that thinks—the *πνεῦμα* or the *ψυχὴ* ? That will enable us to get at something.

The CHAIRMAN.—I believe Sir Tilson Marsh said it was the *πνεῦμα*.

Sir TILSON MARSH.—Yes, if pressed on the point, I think that I would draw this distinction, that in all probability the *πνεῦμα* when imparted to man, breathed by God, who, we are told, breathed into man the breath of life, was then under circumstances which could not have applied to it except as united to the material.

The CHAIRMAN.—I think it is wrong to say that the *πνεῦμα* is part of God, because we believe God is without parts. It would, perhaps, be better to say, it is an emanation from God.

Sir TILSON MARSH.—Exactly ; it is an emanation from God.

Mr. GREAVES.—God is said to have breathed into man the breath (*Ruach* is the Hebrew word) of life, but I do not think that the distinctions which you have so nicely and so beautifully drawn exist as you have stated them. I do not think that any lexicographer would give the distinction you have drawn between *πνεῦμα* and *ψυχὴ*. If you go back to trace the history of man as it is written in the earlier pages of Genesis, you will not be able to draw that distinction ; and I do not think you will be borne out by Liddell and Scott, or by any other Greek lexicographer. I have gone very carefully into the various definitions of the words *πνεῦμα* and *ψυχὴ*, and they run into each other so as not to permit those nice distinctions which you have drawn, although there certainly would be much that would be satisfying if you could bind us down to such limitations and definitions.

Sir TILSON MARSH.—You say the Hebrew word *Ruach* is the breath of life ?

Mr. GREAVES.—Yes, it is in the singular that the word occurs.

Sir TILSON MARSH.—I would not appeal to the first chapter of Genesis as the ground of my definition, but would go to the first epistle to the Thessalonians as giving the definition I have stated. A careful distinction is, however, drawn between the spirit and the soul in the Old Testament.

Mr. GREAVES.—In the 15th chapter of the first epistle to the Corinthians the body is called a *σῶμα ψυχικόν*, and in reference to that I looked very carefully into the lexicographical distinction between *ψυχὴ* and *πνεῦμα*, and I certainly could not find any line so definite as that which you have drawn ; if it were so, I think the question might be easily, permanently, and happily settled.

Sir TILSON MARSH.—I remember some time ago looking at the passage in the Septuagint which speaks of the spirit of the beast which goeth downward, and of the spirit of man which goeth upward, and the word *πνεῦμα* is there

applied as pertaining to man. It is quoted by our Lord, and therefore has His direct authority. I only contend that the definition of St. Paul meets the various facts of nature as they are presented in what we see around us, and he says, "The very God of peace sanctify you wholly ; and I pray God your whole spirit and soul and body be preserved,"—his definition of the "whole" of man being given in these words—*σῶμα*, *ψυχὴ*, and *πνεῦμα*.

MR. GREAVES.—That is perfectly true.

SIR TILSON MARSH.—Therefore I hold that the Apostle lays it down that there is a trinity in our nature as God has planned it, and that this is consequently opposed to the dual theory of a simple body and soul.

REV. MR. JAMES.—If I may be permitted to bring the meeting back to the paper before it, I should be glad to preface what I am about to say by a reference to lexicons. I think it is unfair to resort to lexicons for the philosophical meanings of words. My idea of lexicons is that they take certain words from certain authors and find out the derivative senses in which these words are used. The fact is, that one author employs a word in one sense and another uses it in another sense, and sometimes you find words confounded one with another, as, for instance, in the case of the words *πνεῦμα* and *ψυχὴ*. In the very paper before us, the author often confounds the mind with the soul ; some writers again use the word "mind" for "instinct," while others use it as meaning spirit. And as this must, therefore, necessarily be the case with lexicons, I do not think we should look to them for the real inner basis of the meaning of any particular word. This I put forward as a sort of protest against the very common mistake of looking at dictionaries for the radical or primary meaning of words, instead of expecting thereby simply to ascertain their derivative meaning from the way in which they are used. I now turn to the paper which has been read this evening, and I will begin by saying that I quite agree with the criticisms made upon it so far as they concern some passages. It has some indefinite expressions, more particularly as regards the point that has been raised with respect to the mind, the spirit, and the soul. The word *instinct* does not occur in this paper, so far as I can remember, and I observe the author frequently uses the word *mind* as applied to animals. For instance, in one place he says, "the mind in these lower animals." Now, here he must mean the instinct, or the soul. The soul includes all the instincts both of the very highest of the lower creation and of ourselves, and tends to further the growth and perfect development of the animal to which it belongs, but it is distinct from mind. The writer of the paper also, at times properly, uses the word *mind* when he must mean spirit. I think it a pity that there should be such a confusion of terms in a philosophical paper ; especially in one so valuable as this is. I think its main object is fully attained, so far as I can gather it from reading it cursorily. I do not know the author personally, and never heard of the paper before to-day, when I first became aware that the subject was to be treated ; but my impression is, that he has proved a great point in section 16, for he there distinguishes between spirit, and mind, meaning soul, *ψυχὴ*, and matter ; and asserts that the spiritual sense

is one thing, the mental sense another, and the physical sense a third. I conceive that the effect of the paper is to prove, what every one of us must go away with a full conviction of,—namely, that any science which calls itself a science dealing with man,—consisting as he does of spirit, and soul, and body,—any such science intending to discuss the nature of man scientifically ought to do so in a spiritual, as well as in a psychical and physical sense. I think I may appeal to the conviction of everybody here when I say that this is really a self-evident matter. The paper supports this proposition very satisfactorily. It also declares, with reference to those who call themselves anthropologists, and who write in propagation of their views, that in speaking of what is peculiar to man in relation to mind, they probably do not consider spirit at all, but argue as if all man's highest intellect, all the superior faculties of his mind, grew out of his physical conformation—out of the actual construction of his physical frame. Now, this is a point on which I think most of us here will agree, namely, that the anthropologists are clearly mistaken, for they not only take up this position, but also deny what has been so well stated by the gentleman who first addressed us, that the spiritual quality of man is an endowment—not a mere development of the physical structure, but a positive endowment, a gift from God, and as plainly a gift from God as any of the other gifts of his manhood—a spiritual gift. The only question in the mind of the speaker who raised the latter point appears to have been as to whether this endowment is something which is given afresh to every human being, or whether, having once been given to our first parents, it is conveyed on to other generations, just as the soul is. My own impression is, that it is an endowment once for all given to man as an integral part of his distinctive nature, and not as an emanation of his structural development; undoubtedly concerned with all his other constituent parts, and interfusing them; but how?—This is a mystery, in the same way as the living structure of a flower and of everything else is a mystery.

MR. GREAVES.—It is easy to cast distrust upon lexicographers, because they give the meanings deduced from certain authors whom they have consulted; but it is indisputable that our blessed Lord put the question, “What shall it profit a man if he gain the whole world and lose his own soul?” It matters comparatively little whether I deduce a meaning from Cicero, Plato, or any other author, if I cannot deduce that which will permit of such accurate definition as would be satisfactory and conclusive; but we cannot here arrive at that conclusive accuracy. The word in the passage I have quoted is “ $\psi\upsilon\chi\eta$ ”—“What shall it profit a man if he gain the whole world and lose his own $\psi\upsilon\chi\eta$?” Now in the Hebrew the *Ruach* is translated both as the word $\psi\upsilon\chi\eta$ and the word $\piνεῦμα$ would be defined; and I must say that, having examined the matter rather carefully from the Holy Word itself, I cannot think that the definitions which have been given, and the distinctions which have been so beautifully and so graphically put before us by a previous speaker, will stand the test of a very close examination.

REV. C. GRAHAM.—I should like to say a word or two on the theological

aspect of this question. I think it is clear that the passage which has been quoted from the first epistle to the Thessalonians does indicate the tripartite distinction which one of the speakers has stated. There we have a body, a soul, and a spirit, all recognized in Holy Scripture as distinct from each other. There can be no question about that ; but I am fully convinced that it is not a distinction that will critically be borne out by other statements of Holy Scripture. You will find $\psi\upsilon\chi\eta$ used for $\piνεῦμα$, and several instances occur to me. "Fear not," says our blessed Lord, "them which kill the body, but are not able to kill the soul : but rather fear Him which is able to destroy both soul ($\psi\upsilon\chi\eta$) and body in hell." Take another passage from the epistle to the Hebrews. It is there stated—"If any man draw back, my soul"— $\psi\upsilon\chi\eta$ —shall have no pleasure in him. This is applied to Jehovah—to the immortal God Himself, and it is also applied, as I have shown, to the immortal part of man. Over and over again have I looked at all the passages in the New Testament where $\psi\upsilon\chi\eta$ occurs, and I am satisfied that it corresponds with *Nephesh* in the Old Testament, and that $\piνεῦμα$ corresponds with *Ruach*. I do not agree with what has been said as to the spirit of man being an emanation from the Spirit of God. If the spirit have come direct from God, it has no need of the sanctification which has been referred to in the passage quoted from the First Thessalonians,—“And the very God of peace sanctify you wholly ; and I pray God your whole spirit and soul and body be preserved blameless.” We may regard it that the spirit is recognized there as undergoing the process of sanctification or purification. If the spirit be an emanation from God, I hold that it cannot require sanctification, and upon this principle I quite differ from the gentleman who has stated that he regards the spirit as an emanation from God. In the passage in Ecclesiastes, where it is said that “the spirit of man goeth upward and the spirit of the beast goeth downward to the earth,” the word is *Ruach*, and that word corresponds with $\piνεῦμα$ in the New Testament. I have made these observations in order that, in the Transactions of our society, it may appear that we have no fear of discussion ; and that there are some of us who are not afraid to stand on the good old orthodox principle in regard to these matters.

The CHAIRMAN.—There is the passage in Ecclesiastes : “And the spirit shall return unto God who gave it.”

Mr. GRAHAM.—I take it that it must be a part of the Spirit of God, if it be an emanation from God. I take it as incontrovertible that you cannot regard the spirit as an emanation from God without looking at it as part of God. I object to the statement of Dr. Young, who regards the soul as “a spark struck from Paternal Deity” ; that idea runs through the theology of a great many excellent men who could not at all substantiate it from Sacred Scripture. The spirit is not “a spark struck from Paternal Deity” : it is a creation. I hold that the spirit of man was first of all created by God, and, if I express my mind clearly about it, I maintain, with some of our excellent divines, that, as man’s flesh begets flesh, man’s soul begets soul. I do not wish to insist upon my particular view, but I certainly do feel that I must

here be antagonistic to the view which has been put forth, because I hold that an emanation from God does not need sanctification.

Sir TILSON MARSH.—I would not contend for the use of the word “emanation”: it is almost impossible to apply human language to such a subject. I contend that there is the same relationship in the use of the word *πνεῦμα*, as applied to man’s superior part, as there is in the use of the word *πνεῦμα*, when God speaks of Himself as τὸ Πνεῦμα ἅγιον.

Mr. GRAHAM.—I think that the word *πνεῦμα* is applied to the *ψυχὴ* by some of our best expositors—that the *πνεῦμα* in its earthly aspect is regarded as the *ψυχὴ*, but that the *πνεῦμα* is contained in the *ψυχὴ*. This, to my mind, is distinctly proveable in the New Testament.

Sir TILSON MARSH.—I believe there is some truth deeply underlying the use of the word *πνεῦμα*, which we cannot at present quite see, and that it has yet to be revealed to us.

Mr. GREAVES.—That there is a distinction running through Scripture I agree; but that the lines of demarcation are as distinct as you make out I cannot see.

Mr. ROW.—I am quite in accord with those who think it impossible to draw a narrow and close line. I am not quite sure as to the exact number, but I am tolerably certain that the words *πνεῦμα* and *ψυχὴ* occur at least two hundred times in the New Testament, and I am quite satisfied that it is impossible to draw that hard-and-fast line which has been laid down this evening respecting the meaning of these words. I am quite aware that the term *πνεῦμα* is only used in divine revelation: I have never seen it applied to the mind of man in any Greek author. Of course I only speak from my own experience. It seems to me that the term is one that has originated independently of revelation, and of course it is meant to point to a certain sort of division in the human mind; but I should hesitate to say that the *πνεῦμα* contained the whole of man’s rational powers; because, considering the extent to which this subject was discussed in ancient philosophy, which discussed nearly everything connected with the rational powers, it is strange that the word does not appear; but I admit that there is a higher principle referred to, which is called the *νοῦς*. But, taking the general run of Greek philosophers, there is no other idea than that man consists of two portions—mind and body, the mental including the various forms of reason; but one speaker who has addressed us seemed to think that the whole of man’s reason exists simply in his spiritual portion, which I think is an assumption very much greater than the Scripture seems to warrant, and one which seems to contradict all the truths of mental philosophy with which I am acquainted. If I were to lay down a distinction, I should be inclined to think that the *πνεῦμα* referred to the higher operations of the mind—to all those higher conceptions of things not seen—rather than to the more logical powers of the human mind. But this is a question which hardly seems to have been touched upon by Dr. Hitchman. I must say that I concur in a great deal that has been said this evening respecting his paper, but feel unprepared to join in the debate thereon, for,

although I have read it through, I do not completely understand it. The reasoning seems obscure, and some of the sentences are too long. There is one point which has been raised this evening, namely, as to whether the mind is capable of action independent of its physical structure. I should say, we want evidence that it is ; at any rate I have never been able to ascertain distinctly whether such is the case. At the same time I should think that the will is in some degree independent of it. The only argument I can bring from my own experience is this. One night at Oxford I was reading the second chapter of the Sixth Book of Aristotle's Ethics, and I fell asleep in my easy-chair, and I then did during my sleep what I could not do when awake—I went through and analyzed the whole passage. This is a fact, however it may be accounted for, but it seems to me, that certain portions of the brain continue asleep while one is dreaming ; this may impart extra power to those portions which are awake. But taking the whole of our mental phenomena, it seems to me that they are exerted through the medium of the brain. This brings me to what has been said about the $\psi\chi\eta$. The ancients held that vitality was inherent in the $\psi\chi\eta$, and I find in the New Testament that the $\psi\chi\eta$ is spoken of as an immortal principle. But I consider that we cannot possibly arrive at any essential knowledge of the actual forms of human consciousness by analyzing the mere terms used by Divine Revelation, which I do not think was intended to give us any idea of what the soul consists of, but simply to make us wise unto salvation.

MR. FURNIVAL.—I quite agree that man is of a dual nature, consisting of body and soul. With regard to the distinction between reason and instinct, I believe that reason in man is only a fuller development of what is found in the lower animals. We have a key to the distinction between soul and spirit in what our Lord says :—"That which is born of the flesh is flesh ; and that which is born of the spirit is spirit" (St. John iii. 6), where spirit is something altogether distinct from the soul. If, as I believe, the spirit be an emanation, I quite agree with the assertion that it cannot be capable of sanctification, because it must be perfect in itself ; it is the spirit that sanctifies the man, and prepares him for a purer and a happier state of being.

DR. DENDY.—With all due respect to the gentleman who was kind enough to agree with me with regard to the endowment of the brain by the Deity, I think he totally misconceives the opinion of the anthropologists. 'He has made the sweeping assertion that they do not believe in immortality at all. He has taken his evidence from Carl Vogt, and perhaps from Professor Huxley and those who hold extreme opinions ; but the opinion of anthropologists generally by no means goes so far.

DR. THORN.—As an old friend of Dr. Hitchman I must beg pardon for intruding when so abstruse a question as the duality or tri-unity of man's nature—whether he be possessed of soul and body or of soul, body, and spirit—is discussed ; but I cannot forget St. Paul's words, already quoted. And certainly the body is of the dust. It was said when Cain slew Abel, "The voice of thy brother's blood crieth unto me from the ground." Here was, first, the manifestation of body ; then, secondly, the manifestation which

was called psychical ; and then we come to something which was greater still, and that was spirit, or *Ruach*—the immortal breath which must live for ever either in happiness or misery. The spirit was considered by the ancient philosophers as something invisible. This was shown when they made the Hebrew letter Teth and the Greek letter *Theta* stand for 9, which was the invisible number. Were Dr. Hitchman here, he would be able to explain whatever required explanation.

MR. JAMES.—St. Paul has given a philosophical distinction from which we may fix *πνεῦμα* as one part of manhood, *ψυχή* as another, and *σῶμα* as a third. I think we may take advantage of this distinction, although it has never been noticed by any other sacred writer.

THE CHAIRMAN.—I may say that this has been a very interesting discussion, and I am sure I am only expressing the general feeling when I state that it is to be regretted Sir Tilson Marsh speaks so seldom, for his remarks have been extremely interesting. There is only one point in reference to the question which has been raised that seems to me to have been overlooked by all the speakers, and it seems to some extent to reconcile the conflicting notions that have been expressed. In the account of the creation we are told that God breathed into man the breath of life, and as a consequence man became a living soul : there you have the two things intimately connected together. The discussion on this point has been well sustained, and I think it will form a very pregnant subject which may be treated specifically afterwards when we see the discussion in print. As regards the paper, I think that the author is wrong in attributing materialistic notions to anthropologists generally, and one of the things in his paper which astonished me most was that he should be running a-tilt at the anthropologists of London, Vienna, Paris, and Madrid, and the societies founded in connection with the London Society, more especially since he himself has founded an anthropological society in Liverpool. But the best proof that the anthropologists do not accept these notions, do not exclude religion from the data they take in arriving at conclusions as to anthropological truth, is to be found in such evidence as is afforded by the book which I hold in my hand ; it was written by the late M. Boudin, who belonged to the Anthropological Society of Paris. The work begins by quoting Cicero, who very many centuries ago described man as a religious animal. But M. Boudin is in no way led astray by those false notions which confound all religions together. (Apparently Professor Huxley and some other of our modern anthropologists are exercising their ingenuity to confound them.) He actually argues that religion is not even an effect of the idiosyncrasies of a people, but that it is actually the cause of their rising—in other words—"The religion of a people is the cause, and not the effect, of the civilization of the people or of its barbarism"—"*la religion d'un peuple est cause, non effet de sa civilisation ou de sa barbarie.*" It is attempted by some anthropologists (it would be unfair to say that all anthropologists agree with these views) to make out that pantheism is peculiar to certain peoples, and that a belief in one God is peculiar to certain other races. This was refuted long ago, and by no less an authority than Voltaire,

who is quoted here by M. Boudin :—" On a cru au polythéisme dans tous les climats ; et il est aussi aisé à un Tartare de Crimée qu'à un habitant de la Mecque de reconnaître un Dieu unique. . . . La religion Chrétienne, née dans la Syrie, ayant reçu ses principaux accroissements dans Alexandrie, habite aujourd'hui le pays où Teutate, Irmensil, Frida, Odin, étaient adorés." It is very important that we should have points of this kind brought out, because, as Dr. Hitchman says, we are now, in the year 1870, seeing produced what was brought out in 1670, and there are unfortunately very few sources of refutation. A great many organs of the press eagerly copy what is said by eminent men like Professor Huxley, and probably we are almost the sole society making a stand and pointing out how very old-fashioned and very untenable these things are.

The proceedings then terminated.

ORDINARY MEETING, 2nd MAY, 1870.

THE REV. R. THORNTON, D.D., VICE-PRESIDENT, IN THE
CHAIR.

The Minutes of the last Meeting were read and confirmed.

The following elections were announced :—

MEMBER :—R. R. Newman, Esq., 53, Upper Bedford-place.

ASSOCIATES, 2ND CLASS :—Rev. F. Williams, B.A., Saltley Vicarage ;
W. J. Harris, Esq., Worthing.

The Secretary, in the absence of the Author, then read the following paper :—

ON COMPARATIVE PSYCHOLOGY. By E. J. MORSHEAD,
Esq., H.M.C.S., *Hon. For. Sec. Vict. Inst.*

IN a former paper (read before the members of this Institute on the 2nd of March, 1868) I attempted to show that the difference between the human psychology and the brute psychology was a difference not of degree, but of kind. I took the following position with reference to this difference—that, while man possesses both instinct and reason, the brute possesses instinct alone. I now purpose making a few further remarks on the subject of instinct.

2. Instinct is, in the original sense of the term, a *natural impulse*. The usual meaning attached to it is, as I consider, rather too limited. We usually call those actions which cannot, so far as we know, proceed from a foreknowledge of their probable consequences, *instinctive actions*; but when an animal may be reasonably supposed to be aware from experience whether an action is likely to prove beneficial or prejudicial to itself, we remove the action from the category of instinctive actions, and attribute it to a rational motive. It is necessary, therefore, in order to avoid misconception, that we should closely adhere to the foregoing definition of instinct; and that we should bear in mind that the term is properly applicable to the impulse

alone, and not to the knowledge which precedes the impulse. If, for example, I, as a rational being, experience an inclination to perform a certain action in consequence of a chain of reasoning by which I have demonstrated to myself the advisability of the action, the reasoning process should be carefully discriminated from the inclination. The reasoning is intellectual, but the inclination is instinctive. Under the head of instinct, then, I include all impulses whatsoever, whether they are common to the whole animal creation or peculiar to certain species; whether they are dependent on a condition of the body or excited by the circumstances with which the animal, rational or irrational, is brought into contact. The difficulty, however, does not lie in distinguishing between the inclination and the reasoning process; but in accounting for the fact of the inclination being excited without a previous mental operation. There can be no doubt but that brutes are endowed with a quality to which, for want of a better epithet, I have affixed the term "natural sagacity,"—a quality by virtue of which my cat, when I drive it from the room, makes for the door, and does not rush blindly against the wall.

3. In proceeding to consider the nature of instinct in the lower animals we encounter at the outset a most remarkable phenomenon, viz., that they perform actions in cases where it is manifestly impossible that they could have learnt the desirability of such actions by any process of ratiocination. We must, however complex this phenomenon may be, accept it as an ultimate fact, any closer analysis of which is entirely speculative. I may assume, without much danger of contradiction, that by far the greater number of the actions of a brute are clearly assignable to an internal impulse; or rather, to express myself more accurately, that they are simply reflex actions produced by the circumstances in which the animal is placed, and by which his instincts are called into play. The question at issue is, whether the whole of his actions do not proceed from the same source.

4. It is evident that in estimating the psychological value of those actions which are peculiar to given species of animals, and which undoubtedly proceed from *blind* instinct; that is to say, those actions whose necessity cannot have been impressed upon the animal by his experience, we should not attribute to them the same amount of intelligence and forethought which they would indicate if they were performed by a human being. The cell of the bee is constructed on principles which combine the greatest amount of space with the smallest expenditure of wax, and a human being could only arrive at a knowledge of these principles by means of an

elaborate mathematical calculation, which is a purely intellectual operation. But we do not consider the bee one whit more intelligent than the wasp, who constructs his cell on less scientific principles; because we know that they both act from an internal impulse, that the intelligence displayed is not their own intelligence, and that their actions are not the result of their own reasoning. Nor when we find the bees covering the body of a slug with wax are we driven from the province of instinct. We see in this action the awakening of a dormant instinct, which does not manifest itself until it is required. I cite these common instances in order to narrow the field of debate, and to restrict it to those cases in which the animal acts in accordance with acquired knowledge.

5. The instinct supplies the animal with certain general principles of action. It teaches him how to construct his nest, or his cell; it shows him how to procure his food, and to rear his young; and, so far as their more necessary and indispensable wants are concerned, we find all animals of the same species acting with undeviating uniformity. But he is frequently placed in circumstances which his instinctive knowledge does not enable him to deal with; and, evidently in order that he may adapt himself to new conditions, the sphere of his knowledge is capable of being considerably extended by the aid of memory; and it is this use of memory which has given rise to the notion that the brute is possessed of intelligence. We rashly apply to the lower animals the test of an analogy drawn from our own consciousness; and because we find ourselves consciously regulating our conduct by past experience, we are liable to infer that the animal does the same. Yet, if we studied the phenomena of our own psychology more attentively, we should find ourselves continually acting in accordance with *impressions*; which have been stored up by the memory, and which produce actions entirely automatic. A person who has been injured, for instance, by a cow or a horse, will probably feel an instinctive terror at the appearance of one of these animals, although his reason may show him that they are rarely dangerous, and it is not unfrequently the case that, while perfectly aware of the groundlessness of his fear, he is totally unable to overcome it. The memory is not in itself an intellectual quality; it retains sensations and impressions as well as ideas; and not only is this so, but the impressions unconsciously retained by the memory are capable of awakening in us the instincts of fear, anger, &c., and of producing without any exercise of the reasoning faculty, actions conducive to our own safety. I do not

say that we *never* reason in such cases, but merely that we often act, without reasoning, from an impulse caused by the association of impressions; and this fact is quite sufficient to establish the principle. Of course, when I afterwards come to analyze, at my leisure, the psychological process which has resulted in my running away from a cow, I may attribute my action to the circumstance of my having been tossed by a cow at some former period of my existence; and the process may seem to me to be a rational one: the fact that I reason on the matter subsequently may beget the idea that I reasoned at the time; whereas at the time in question it is quite possible that I had no conscious recollection of the former occurrence.

6. For when any object is retained by the memory, the feelings which it inspired when it was first presented to the consciousness are retained together with it; and when it is reproduced, those feelings are reproduced also, except in as far as they are modified by particular circumstances. And this action of the memory is quite independent of reason; for, although we are able, as an act of volition, to direct our attention to circumstances of our past lives, we can only do so when those circumstances have been already impressed upon and retained by the memory spontaneously. And with respect to circumstances which we have forgotten, we are compelled, if we wish to recall them, to direct our attention to concomitant circumstances which we have *not* forgotten, and to evoke them from oblivion by means of *association*, which is a prominent characteristic of the memory, and which is by no means under the direct control of the rational will; in short, we must humour the memory, but we cannot command it. And if we wish to impress any fact upon our memories, we are obliged, unless the fact is of such a nature as to impress itself upon us involuntarily, to have recourse to artificial methods adapted to our individual peculiarities. Memory is, of course, indispensable to an exercise of the intellectual faculties, and, *ceteris paribus*, the man who has a good memory is obviously superior in intellectual power to the man who has a bad one. But memory is quite as indispensable to the unintelligent brute; and—if I may be permitted to assume such a contingency for the purpose of illustration—the annihilation of this important faculty in the animal kingdom would be as disastrous in its effects as the suspension of the law of gravitation in the natural world. Were it not for memory, the bird would forget his way back to his nest, or that he had a nest at all; the animal flying from a pursuer would forget directly he turned his head forwards that there was any necessity for continuing his

flight. But, while memory is not an intellectual faculty, it is on the other hand intimately connected with instinct; and if any proof were required in support of this assertion, it might be found in the fact, which is palpable to every one who has considered the matter at all, that those objects or actions which interest our feelings (or instincts) are more vividly impressed on, and more permanently retained by, the memory, than those which have occupied the intellectual faculties alone.

7. In the lower animals we find the same principle—of the production of actions by an association of impressions. If I thrash my dog every time I wear a scarlet coat, the dog will, after a time, make a point of avoiding me whenever he sees me with the scarlet coat on. There need be no reasoning in the dog's mind at all; he instinctively associates my costume with a sensation disagreeable to himself, and he gets out of the way accordingly. In the discussion on my former paper, Professor Macdonald, arguing on behalf of the intelligence of brutes, cited the instance of his brother-in-law's dogs, who would always go out with him on a week-day, but who never offered to accompany him on Sunday. And why? Because the dogs had learnt by experience that Professor Macdonald's brother-in-law, with his Sunday coat and prayer-book, was a very different personage from Professor Macdonald's brother-in-law with his shooting-jacket and gun. There is, perhaps, no animal whose actions are more difficult to explain psychologically than a dog's: and the reason of this seems to me to be that, whereas brutes can only be influenced through their instincts, we possess in the extraordinary attachment of the dog towards his master an additional means by which we can work upon him. If we could get other animals to pay attention to us, we might teach them as much as we do the dog. The most (apparently) rational actions of a dog proceed from his affection; and no one will deny that both affection and fear are purely instinctive. The numerous instances upon record in which a dog has called assistance to his master when in danger, are as little indicative of reason as the sagacity displayed by an animal in securing its prey or defending itself from its enemies.

8. If, then, we admit—as we cannot well avoid doing—the function of memory in causing actions without the intervention of an intellectual process, there is very little space left in the brute psychology between sensual perception and the innate tendency to act. It is to this intermediate ground that I assigned (in my former paper) the phrase “natural sagacity.” It is inconsistent with our ideas of an intelligent Creator to

suppose that he would have constructed beings endowed with the power of voluntary locomotion, without at the same time providing them with some sort of safeguard against the dangers which they must necessarily encounter. The brute has a certain amount of judgment and a certain amount of knowledge, either born with him or acquired by experience; and, because a human being has both judgment and knowledge, there may appear to be intellectual qualities common to the human being and the brute. But there is a vast difference in function between the quality which is always subordinate to the instinct, and the quality which is capable of acting in opposition to it. In the brute the instinct is *always* the motive power: in man it is not always so.

9. The remarks which I have made above as to the spontaneous nature of the operations of memory apply equally to the other psychological faculties (I use the word "psychological" here in order to avoid the term "mental," as applied to brutes). We are so accustomed to regard the powers of judgment and abstraction as intellectual faculties, that we are apt to forget that they operate independently of the intellect; or, if we *do* admit their existence in the lower animals, we cite them as proofs that the lower animals are capable of reasoning. Nevertheless, these faculties are almost mechanical in their mode of operation. The *judgment* (understanding the term in a modified sense) of the brute is easily resolvable into a balance of inclinations; for, whenever two or more courses of action are suggested to him, he adopts the one which his inclinations, guided by his innate knowledge or his acquired impressions, prompt him to adopt; and if his inclinations drag him with equal force in different directions, his action is suspended until the balance is destroyed. This phenomenon is of so frequent occurrence that it may appear almost superfluous to mention a case in point. Many years ago I was walking with a friend, accompanied by a female spaniel of considerable sagacity. Several miles from home we parted company, and walked in opposite directions—the dog being out of sight at the time. When we were some hundred yards distant from each other I heard my friend calling the dog, and looking back I saw the dog standing in the road about halfway between us. I immediately called the dog, and my friend continued to do the same. The dog looked at me and then at my friend; first it ran a few yards towards one of us, then it turned and ran a few yards towards the other. In this condition of suspense it remained for nearly half an hour, until—probably in consequence of my using measures of intimidation—the balance of inclination preponderated in favour of my

friend. Now, if the animal had retired to the road-side and placed its head between its paws, it would perhaps have been difficult to show that it was not employed in forming a rational judgment; but as the case stood, the dog's demeanour evidenced nothing more than a balance of desires. And whenever an animal appears to hesitate as to what it shall do, we may always find this principle at the bottom of its hesitation.

10. This state of equilibrium is very different from intellectual judgment—or rather from the state of inaction which precedes and is necessary to the formation of an intellectual judgment. A human being may find himself in precisely the same condition as that which I have just mentioned, and his course of action may be finally decided, as in the case of the brute, by a destruction of the equilibrium; and, so far, he merely acts under the influence of his instinct. But when he proceeds to form an *intellectual* judgment, his mode of operation is different. He places his mind by an act of the rational will in a condition of suspense; so far from being led by his inclinations, he voluntarily withdraws his attention from those objects which are likely to influence his desires, in order that his intellect may work freely. He refuses to be governed by the accumulated impressions, stored up and spontaneously presented to him by his memory; on the contrary, he searches his memory for fresh data, or consults the opinions of others. The difference then between the human being and the brute, so far as regards the faculty of judgment, consists in this, that the action of the brute is determined by the facts which are present to his consciousness at the time of the action, whereas the human being, although placed in contact with the same facts, has the power of suspending his action, and directing his mind in quest of fresh facts by which his conduct may be regulated; and it does not militate against this distinction that the power is not always exercised.

11. Again, abstraction and generalization only become intellectual when they are utilized by the intellect. A bull is irritated by a red colour, and not by the object of which redness is a property; but it would be absurd to say that the bull voluntarily abstracts the phenomenon of redness from these objects. The process is essentially one of abstraction, and yet at the same time it is entirely automatic.

12. Or, coming to generalization, let us suppose a mouse encountering a cat for the first time in his life; and let us further suppose that he is not afraid of cats, in consequence of his ignorance of their habits. But, being injured or intimidated by the cat, he takes care, if he is lucky enough

to escape, to avoid cats for the future; and this phenomenon is accounted for by the principle of the association of impressions, so far as concerns that particular cat. But if his experience of cats is to be of any use to him, it is necessary that he should avoid *other* cats also; and, in fact, we shall find that his fear is not confined to the individual cat in question, but is extended to the whole species; that is, he has generalized from a single instance. On his second encounter with a cat he may be conceived to reason syllogistically, and to argue from his general rule to a particular instance. "Cats have to be avoided: this is a cat; therefore it has to be avoided."

13. Thus the brute abstracts and generalizes and reasons syllogistically, but he is unconscious of doing so. His psychological machinery works in the same way as that of a human being, but he cannot control its workings. Certain qualities of an object engage his attention to the exclusion of other qualities, which are disregarded; and thus he *abstracts*, automatically. The image of an object having been imprinted on his memory, the feelings which it excited are also imprinted on his memory, and on the reproduction of the image these feelings and the actions resulting therefrom are reproduced likewise: thus he *acts from experience*, automatically still. The image may be the image of the same object, or the image of another object of the same species, but the effect is the same, and thus he *generalizes*, automatically also. And, as to syllogistic reasoning, the explanation is very simple, viz., that when philosophers came to examine the nature of the human mind they found that in forming conclusions it operated after a particular method; they defined this method and called it a syllogism. But this method is nevertheless common to man and brute, and, like the faculties of abstraction, &c., it only becomes *intellectual* when we choose to make it so.

14. It may be asked why, in cases where the human being acts from reason, may we not assume that the lower animals do the same? Why do we deny to the brute the power of reasoning, when from his previous experience he may be supposed to know the nature and object of his actions? We may answer this question by another. Why *should* we assume that he reasons? We find the brute gifted from his birth with a tendency to act in a particular manner under particular circumstances; we find this tendency inherent in his organization, inasmuch as the inclination to act in a similar manner is common to all animals similarly organized,—in other words, to all animals of the same species. We find that the obvious, and I think I may say, exclusive, object of these inclinations

is to preserve himself and to propagate his species ; and the animal, so far as he himself and his species are concerned, does nothing else. He does not either improve or deteriorate psychologically ; he is in precisely the same condition now that he was in hundreds of years ago. We find that his instincts are capable of being called into action by the association of impressions which I have mentioned above, and we find that he is thereby enabled to act in conformity with circumstances for which he was not originally provided. Why, then, should we invest him with reason, for which he has no use, which is inferior to instinct as a means to the only object he ever carries out ?—for even *we* often find that in moments of peril, when our intellectual faculties are paralyzed, it is instinct that comes to the rescue. The brute has now and then an internal conflict as to what he shall do or shall not do, but it is not a conflict between reason and desire : it is a conflict between one desire and another. He may avoid an action because a similar action has been in a former case attended with painful consequences ; or, again, he may perform an action because it has previously proved beneficial to him. But he gives no indication that he has any comprehension of abstract good or evil : he is guided entirely by his inclination, and there is no moral standard, however low, by which we can judge him. The remark which I have seen somewhere that the dog stands in the same relation to his master as his master does to God, is valueless, until it can be shown that the immediate hope of reward and the immediate fear of punishment are the sole inducements to virtue. The animal is, in fact, an automaton, but he is an automaton of Divine construction. He has sensations and desires, but these are simply the wires by which he is worked, and without which he would speedily become extinct. He has memory, but his memory does not retain ideas ; for, in the higher sense of the term, he has none. He has, by means of his memory, associations of impressions, but these associations, by awakening his instincts, regulate his conduct automatically.

15. I cannot close these remarks without adverting to an assertion which we commonly meet with, that the theory of a mental distinction between man and brute is grounded on jealousy. It appears to me to be highly probable that the opposite theory is equally unscientific in its origin. At all events, this seems to be Lord Brougham's view.* He says :—

“The sceptical or free-thinking philosophers always lowered human nature as much as possible. They regarded it as something gained to their argu-

* “Dialogues on Instinct.”

ments against religious belief, if they could show the difference to be slighter than is supposed between men and brutes, and that there is a chain of being from the plant, nay almost from inorganic matter, up to man. They seem to have had a confused idea that this helped them even to account for the constitution of the universe 'without the hypothesis of a Deity,' as Laplace is said to have termed it when Napoleon questioned him on the remarkable omission in the '*Mécanique Céleste*.' Thus much is certain in point of fact, that those philosophers, and especially the French school, were fond of lowering the human intellect by raising that of the animals; and while the priests were lavish of their admission that our moral nature is utterly corrupt but claimed for our intellectual capacity to be only a little lower than the angels, the society of the *Encyclopédie* and the coterie of Baron d'Holbach were fond of levelling the intellectual distinction between immortal and confessedly mortal beings, though they denied the moral depravity of their race with perhaps no very strict regard either to the evidence of their consciousness or of their observation."

The CHAIRMAN.—I suppose I may take it for granted that the thanks of the Society are to be returned to the author of this paper. I cannot say that, however, without adding that I think we must stigmatize the paper as being too brief. I shall now be happy to hear any remarks which any of our members or visitors may wish to make upon the subject.

Rev. C. A. Row.—I have no wish to dispute the general position laid down in this paper, that there is a vast distinction between the intelligence of man and of the brute creation. That is the last thing that I should dispute, but I think there is a great want of satisfactory proof of that distinction adduced in the paper, while there are several assumptions in which I am unable to acquiesce. The author of the paper takes for granted the existence of something which he calls natural sagacity; but he has not told us what it is. For aught I know, it may include a large share of what I call reason, and therefore we are in a difficulty when we come to discuss the matter. Then I would call attention to the latter part of the paper, where there appears to me to be a want of accuracy of definition. The author has used the words "reason," "reasoning," and "intelligence," and several other terms of that description, as though they meant the same thing; but I think there is a vast distinction between reason and reasoning—between the noun and the verb. When I speak of reason, I mean something different from what I mean by argument. If I say, "I will argue this point," I mean that I will argue it either deductively or inductively; but when speaking of my reason, I therein include nearly the whole of my intellectual faculties. In this paper, the author views reason as though it had the same meaning as reasoning; and in the latter part he asserts that the "animal is in fact an automaton." Now if that theory is admitted, it goes a great deal further than I should like to go; an automaton is a mere piece of mechanism without feeling and without natural sagacity. In his 14th paragraph Mr. Morshead says:—

"The animal is in fact an automaton, but he is an automaton of divine construction."

The term "automatic" is used with great liberality, and I am surprised to find things which I should call high intellectual operations, involving induction and other intellectual principles, designated here as being automatic; for I find such operations ranked in my books as very high intellectual operations. But it seems to me that one of the great errors in the paper is its great want of definition. Within what bounds is the natural sagacity of which the author speaks, limited? In the second section, however, the author speaks of his cat; but he has not dealt fairly with it. It rushes to the door when he drives it; but this only exhibits a small amount of sagacity. If I had a cat that, wanting to go out, "mewed" at me and scratched at the door until I opened it, I would not think it involved a very high act of reason on the animal's part, but something denoting the presence of mind. Now a dog would probably go a step beyond the cat; if unable to get out by making a noise, it would lick my hand, and thus draw attention to its wishes. That goes much beyond what the author lays down for natural sagacity, and I cannot understand operations of that kind, without ascribing to the animal a certain amount of mind. Its ideas are limited, but there is a certain analogy between its acts and my own. But then the author disputes my right to argue, because I see a cat drawing inferences like a being possessed of intellectuality, that I am entitled to infer that it denotes the presence of mind. If I cannot argue from myself to the animal, I cannot argue at all. The only ground I have to go upon is by judging what should I do under similar circumstances to those in which the animal is placed; unless I did that, it would be impossible to arrive at any theory with regard to the powers of the animal. I agree with Mr. Morshead in thinking that a very large portion of the acts of animals are instinctive, as he states in the fourth paragraph, when speaking of the bee, with whose habits I am well acquainted. Of course there can be no doubt that in the construction of its cell it is directed by a knowledge which is unquestionably not its own; but at the same time, when we admit this, it forms no reason for denying that the bee has a certain amount of knowledge of some kind; for I have seen that under certain circumstances they can, and do, modify their forms of architecture. Bees do not form their cells exactly parallel to one another. In taking up a hive of bees when the comb has not been perfectly formed, I have given it a shake, and one comb has fallen down. That forms a very serious obstacle to the bees in building, according to their usual principles; but if you have ever noticed an accident of this kind, you will find that bees are capable of modifying the whole of their architecture to meet such a difficulty. They have a sufficient degree of intelligence for that. Mr. Morshead seems to think that these animals are guided purely by instinct. No doubt they are guided by it in a very great degree. Now I will define what I mean by instinct. The only correct definition of instinct is that of an irresistibly strong feeling impelling a human being or an animal to a particular

kind of action. But I maintain that the bee is capable of modifying his actions within a very, and only a very, moderate space. Take an example : The general feeling of the common working bee towards the queen of the hive is instinctive. The queen is treated with the most profound respect by the other bees ; they feed her, and show her every feeling of deference ; but after the first swarming what takes place ? The old queen is the one which leaves the hive, and the new one does not come out until two or three days after the swarming. There are several other royal grubs in the royal cells, and the new queen immediately gets into an exceedingly agitated state, her purpose being to destroy the remaining royal grubs. But the other bees, who usually show her supreme deference, rebel when she goes to destroy the grubs. If you ever stood watching a hive before the second swarm issues from the hive, you will hear a peculiar noise made in the hive by the new queen in her attempts to destroy the royal grubs ; and the working bees then cease from all their other labours, and proceed to drive her away from the cells in question. This shows something in the bee which is a great modification of its usual instinctive feelings ; but, at the same time, I admit that even in the bee the instinct is not capable of any very large modification, even by the certain degree of mental power which it appears to possess. I further agree with Mr. Morshead that the larger portion of its acts are instinctive ; but it is a curious question whether all its actions are so. Before swarming from a hive, the bees will send out scouts to ascertain where they are to go to. In my own garden, we had in an open house a hive with a considerable quantity of combs. For several days I had observed many bees flying about a hive, which was about a quarter of a mile from their own, and at last a whole swarm came and took possession of it. They had sent out their scouts to see where they were to go, and those scouts must have conducted the queen to the new abode, for if she had not come, the other bees would not have followed.

MR. J. REDDIE.—Will you explain how it is that you know that scouts are sent out by the bees ? How do you know they do not go out of themselves ?

MR. ROW.—I do not mean that they are sent out in that sense, but it is a fact that bees do examine a place to see where they are to go to ; and what is extraordinary to me is that they usually settle before they take possession of a place. They settle on a tree, and you then get them into another hive. Mr. Morshead has laid it down that a bee by a simple act of memory finds its way home. Now I dispute that position, especially from what I know of them. I cannot understand how a bee can find its way through the air by any act of memory. Take a strong case. If you buy a hive of bees, and take it home in the night, say a distance of two miles, the bees will find their way back to the hive next day without any difficulty. I think they must have a separate sense by which that is done ; only some 200 or 300 will go back to the old place, but you will find that the bulk of the bees will come to the new place as regularly as possible. And the idea that they can remember their way through the air so as to find a path home, I cannot agree with. Mr. Morshead, again, seems to think that the actions of the dog, to

whom he grants a certain amount of intelligence, are nearly automatic. But I cannot understand how a great many of the actions of the dog can be accounted for on the ground of instinct, for I suppose an instinctive action is one where a peculiar feeling takes place and produces an outward action of an inevitable character.

MR. REDDIE.—How could you apply that definition to the making of a bee's cell?

MR. ROW.—The making of a bee's cell is an intelligent principle given to the animal by the Creator. I do not suppose the bee makes the cell by any act of its own intelligence; but the animal must have a feeling which prompts it to work in a particular manner, though at the same time I think the intelligence given by the Creator is capable of slight modification to suit the particular circumstances of the place where the bee is to build its comb. I have examined many hives, and seen great modifications of their architecture at different times. Any person who has examined hives knows that the architecture of the queen's cell differs from that of the common cells, and if the queen dies suddenly, and there are only the grubs of working bees of a certain age, the bees pull down the walls of several common cells, and change them into a royal cell. Surely this evidences a certain degree of modifying power beyond mere instinct. But we have a more sure mode of testing the matter by the intelligence of the dog, the elephant, and other animals. I have kept many dogs, and in a former discussion referred to one or two remarkable things that have occurred to myself with regard to the intelligence of dogs, and from which occurrences I infer that the dog is capable of intelligent action. My father lived three miles from Devonport, and between us was Plymouth harbour, which we could get across by means of a steam bridge worked on chains. Now, when any of us went from the one place to the other, a dog of ours used frequently to follow; but sometimes, when it reached the landing, it found that the steam bridge had already started; in that case it waited patiently for the return of the bridge, when it quietly walked on board and was taken across. Now I say it is impossible to declare that these actions were simply instinctive—the dog worked through a series of inductions. It had observed that the steam bridge went to and fro, and from observation it had also come to the conclusion that if it waited long enough on the bank, the bridge would come back again and take it across, and I do not think those acts differed from any actions of my own mind under similar circumstances. The great difference is that the animal has undoubtedly a very limited range of ideas; but I cannot understand that its actions are automatic, as Mr. Morshead asserts.* Mr. Mor-

* The following is even a more remarkable case than that cited by Mr. Row. A fox was one day observed on a bank of the river Blackwater, in Ireland, tearing a branch from a bush. This branch he conveyed to a point and set floating down the river; after a while the branch reached a number of wild fowl, which rose, to settle again when the supposed danger had passed. The fox repeated this process until the wild fowl no longer exhibited any signs

shead speaks of syllogisms and of reasoning as if they were automatic, and he thinks we reason in syllogisms. Now I do not think so,—we are not conscious of doing it. That is clear. It is true that our true reasonings may be reduced to syllogisms, and that we can detect correct intellectual operations by finding whether they vary from that form or not. But the animal creation, especially in its higher forms, is capable of making an induction, and that, as I understand it, and as I read in all logical treatises, is an intellectual act. Mr. Morshead seems also to think that the act of generalization is not an intellectual act ; but we are met with the great difficulty, that the paper has not exactly defined reason, intelligence, and other attributes, and this makes it very hard to arrive at a conclusion with regard to certain points in it. In the 7th section is an anecdote told here by Professor MacDonald, showing that a dog knew when it was Sunday. Now, I never had a dog that I could not teach to know Sunday from the other days of the week ; or that offered to come to church with me. The paper admits that you can teach these animals a great deal, and that shows that they are possessed of something different from instinct.

Mr. REDDIE.—How can you teach a dog to know Sunday from the other days of the week ?

Mr. ROW.—I have done so. The author of the paper seems to think that much of what the animal does, proceeds from its affections, and that its affections are instinctive. But to me that appears to involve a great deal of confusion. My affections in their higher forms are surely not to be characterized as instincts. They are very elevated feelings, belonging to my rational nature.

Mr. REDDIE.—Will you define what you mean by instinct ?

Mr. ROW.—I have already said, and Mr. Morshead will agree with me, that it is an irresistible feeling impelling the subject of it to a certain action. He has also stated that man acts to a great extent upon pure instinct, but I cannot agree with him, for, as a rational being, I qualify my instincts by my reason. The week before last I had an example of an instinctive feeling. I was standing with some others in front of a magic lantern which was about to be used, when an explosion of gas took place. I jumped up ; that was pure instinct. But reason taught me that after the sound was past, danger had passed also. Mr. Morshead, however, says that memory will account for it. We will say that the jump was instinctive, but the next moment I reasoned that, the explosion having taken place, the danger was over. This was something more than an act of memory. Mr. Morshead refers to the fear which some people entertain of a cow. Now I have a great aversion to a horse, having been once kicked by one, and I have always taken great care to keep away from one ever since. That feeling is not instinctive ; but it is an act of inference that what has taken place once may occur again.

of fear at the floating branches ; he then entered the water with a branch, his head being concealed in the leaves, and on arriving amongst the ducks, three or four fell an easy prey.—Ed.

Last midsummer a case came under my observation, which, to my mind, conclusively showed that an animal possesses mental power as well as instinct. I ascended the Flesone with my wife and another lady. They rode on mules. The animal that my wife rode was a kind of king of the mules of Chamouni ; the lady who was with us rode a small mule, which was put first, with the guide to lead it ; but I could not get the king mule to go on ; when we reversed the order of the mules, instead of having to drive the king mule, it went fast enough. Now some process of reasoning must have taken place in the king mule. In this case the difficulty simply arose from our folly in placing the king of the mules in a wrong position. I would not attribute to animals any high rational power, but I cannot account for some things on the simple principle of instinct or mere natural sagacity. Animals are capable of the comparison of such ideas as they have, though those ideas are very limited. I do not think they can reflect on their ideas, but I think that there is every reason for believing that they are capable of comparing their limited ideas, and that they have certain ideas which approximate towards morality. Take the case of a dog. He gets thoroughly ashamed of himself when he has done something wrong. I have it on good authority that a good pointer who goes out with a bad shot gets very soon disgusted, and after a time will not work at all. Then take the case of pigeons. I know a case of a tame pigeon which paired with another. The cock and the hen set alternately on the eggs, and I have seen the hen pigeon, after she has had her turn, deliberately come out of the nest and drive the cock in to set on the eggs. (Laughter.) I maintain that shows an intelligence beyond what we can attribute to instinct. (Hear, hear.) I cannot see why any one has a right to assume the whole point at issue, and to say that an animal is a mere automaton. Then as to the capabilities for education which exist in animals, let any one go to Regent's Park ; there is not a single animal in the Zoological Gardens which has not learnt to be a beggar. (Laughter.) For instance, there is a seal in one of the basins ; it creeps out upon the stone which surrounds the water, and begs for anything it can get. Last autumn I saw this animal come out of the water, and the people would not give him anything to eat ; and the animal soon gave them a splashing by plunging into the water. Shortly afterwards a keeper made his appearance, and the animal had been so well taught that it came out of the water, received its food, and returned in a quiet manner. I cannot account for that as an act of pure instinct ; to my mind it showed that the animal had powers which were capable of instruction ; and if that is so, it must have had some degree of mental power. (Cheers.)

Rev. J. B. OWEN.—I want to ask if the objection you take to the word “automatic” is, that it is incorrectly applied to the active phenomena of instinct ?

Mr. Row.—My objection is that the word “automatic” is applied to several acts recorded in this paper, which are the highest acts of reason on the part of man, and which we consider as belonging to high mental processes.

Mr. OWEN.—Then I do not think there is any real difference between you and Mr. Morshead. An automaton, we know, in its simple Greek meaning,

is a piece of ingenious mechanism performing acts that seem like the results of its own volition. There are two instances at the Polytechnic. The first is the mechanical Leotard, which is as ingenious and elaborate a piece of automatic machinery as ever was known. What is its chief attraction? Why, that it seems to do the acts of mental volition, and it constitutes, therefore, one of the finest evidences of the skill of man in approximating, in however humble a degree, to the acts of the great God. The other automaton is one that is called the neurocrypt, which, as every Greek scholar will know, means "the hidden nerves." The figure of a young lady performs many graceful evolutions and postures, doing it all just like a living person. Now, in this paper we start from the premisses that the brute creation have no reason properly so called—neither the power to reason nor the possession of a mind. If they had this faculty, it would be proved by its being employed, for, though there may be many degrees in the use of reason wherever it exists, we know of no stagnant and inoperative gift of the Creator in the whole world. Whatever exists, He has caused its existence and given it a mission. That is true of instinct and of reason. They have their separate departments, notwithstanding that you sometimes see curious instances not exactly belonging to the ordinary operations of instinct on the part of animals which are brought into artificial connection with man. The dog, for instance, frequently performs acts which are automatic in a metaphysical sense, although they seem like efforts of its own volition; and I understand Mr. Morshead to use the word automatic throughout in that metaphysical sense, drawing a distinction between that and the reasoning acts of reasoning beings. A dog is not able to reason in what it does, but still there are some striking instances of wonderful things done by the brute creation. I remember reading a singular case in a book published by Mr. Bohn; I think it was "on the curiosities of instinct." In past days, the county of Lincoln was not so easily traversed as now; the roads being at times dangerous by reason of the floods that overflowed them. A traveller on horseback having a large quantity of money with him, stopped in the middle of the day by the side of a brook to take some lunch; having finished his meal, he mounted his horse, but a favourite little dog which accompanied him made strong protests against his proceeding on his journey, barking most furiously; but not succeeding by that means in being attended to, it flew at the horse; and, at last, in its extreme anxiety to stop its master, it bit the horse several times. The traveller, fearing that the dog had gone mad, drew out a pistol and shot it, leaving it on the road. He then went on, and when he reached his usual place of stopping for the night, he found that his bag of money was gone. Remembering then the instinctive efforts of his little dog to detain him at the spot where he had rested, he rode back to the brook, which was now a long way off, and found his money-bag on the spot where he had taken his lunch; but upon that bag, its last act having been one of humble fidelity to its mission, lay the dead body of the little innocent self-sacrificing dog. (Cheers.) In a case like that, there were three things at work in the dog: affection for its master, memory to recall the fate of the money, and

self-denial in dragging itself back some distance, wounded and dying, to cover the bag of money with its body. (Hear, hear.)

Dr. E. HAUGHTON.—If that story could be established as a real occurrence, it would be of great value in our discussion, because the qualities shown by that dog far transcend anything within the region of mere instinct. With regard to the bees which have been referred to, Mr. Row raised a question as to how a bee finds its way home, and what faculties the bee employs in the matter. I do not say that I can answer the question, but I can mention two instances which show the degree in which the bee possesses the power. I have read that in the country through which the Nile passes it is customary for the Egyptians to keep bees in hives on boats, and as soon as one honey-field is exhausted, the boats move down the stream, and a new field of flowers is reached, from which the bees can obtain their honey. So the boats go on from station to station as the flower-fields get exhausted; and in that way the Egyptians are enabled to keep many bees. The other instance which I wished to quote is the way in which the people in the west of North America find bees' nests. The bees often build in the trunks of old trees, and there are bee-hunters who obtain a living by cutting down these trees and getting a quantity of honey, which sometimes represents a ten years' store in a single trunk. The way they find out the nest is as follows :—The bee-hunter provides himself with three little pieces of elder-wood with the pith removed, and three stakes, and he then catches three bees and encloses one in each of his elder tubes. Opening one tube, he lets the first bee go, and watches the direction it takes, putting down a stake to mark it. He then lets another bee go, and puts down another stake, marking the direction it has taken; and he knows that the nest ought to be found at the point of intersection in the lines which the bees have traversed. He next lets off the third bee to confirm his view. If all three bees belong to the same nest, the point of intersection in their flight shows at once where the nest is; because the bee does not fly about at all, but, after taking one or two circles in the air, it starts off for home in a direct line. That is a singular instance of the extraordinary instinct of the bee; though I believe it is not an animal possessed of a high degree of intelligence. No doubt man, in common with the lower animals, possesses the faculty of instinct. Suppose a bee flies to sting me before I have time to think whether it is a bee or not, I instinctively put up my hand to brush it away from my face or head.

Mr. Row.—Not if you are accustomed to them.

Dr. HAUGHTON.—No matter whether I am accustomed to them or not. In that small act what a number of faculties have been employed, all of them instinctive. First, I heard the noise made by the bee; then I distinguished that noise from any other; then a message conveying intelligence of the fact went to my brain; and then another message came back from the brain to the muscles of the arm to put that arm in motion in order to strike away the hurtful insect. All these faculties are put in motion without my having reasoned on the matter. I have performed no act of reason; I have not had time to do it; the faculties employed are simply involuntary.

Mr. ROW.—If a bee came to me, I might be tempted to strike it away ; in which case I know I should be stung ; and, therefore, I should keep my hand down, and refuse to strike against it, as a matter of policy and reason.

Dr. HAUGHTON.—Well that, of course, would be a reasoning act. However, so far as the lower animals are concerned, I do not think they can generalize. We have all heard of dogs in a country strange to them, getting into ships and being carried back to their own land. How they manage to get into the particular ship that is going to the place they desire to arrive at cannot be explained, but they frequently do come home to their masters in that way. I believe that the faculty of induction is to some degree possessed by the lower animals.

Mr. REDDIE.—I should like to have a few explanations from Mr. Row as regards a definition of instinct. I have always understood that it was not merely sensational, but something that implied that if you could attribute it to reason it would be of a higher kind than almost the highest act of reason we know of. If you supposed that the bee understood the construction of its cell, it would be evident that the bee, from the very commencement of its existence, had solved a most difficult mathematical problem—one only recently understood by our most celebrated mathematicians ; but perhaps there is less of mathematics in the formation of the bee's cell than mathematicians think. My impression is that the bee instinctively constructs its cell in a round form, and having formed one, he forms another one like it. The first cell would be round, but when the second was formed adhering to it, and others all round it, it would be drawn by the adhesion of the others into a hexagonal form.

Mr. ROW.—You know that no one bee constructs the cells. The work is done by a vast number.

Mr. REDDIE.—Yes ; and when you speak of the bees modifying their architecture, I do not see what else they could do. If you put something across their path, they cannot help modifying their architecture.

Mr. ROW.—But one piece of comb will derange the whole architecture of the hive.

Mr. REDDIE.—Precisely so ; but I do not see how they can help themselves.

Mr. ROW.—They might forsake the hive and get a better one.

Mr. REDDIE.—They only do what an ignorant cottor would do in building a house,—if not round a square, at all events round a corner.

Mr. ROW.—I should think that this power of modification is something above mere instinct.

Mr. REDDIE.—Dr. Haughton said something about the large quantities of honey to be found when the bees are in a natural state, as in the prairies of America, where they seem to make a great deal more honey than is of any use to them ; but the fact is, that the bee has its nature given to it by God, so that it may be serviceable to man. The construction of the bee's cell is a natural act, like the construction of the beaver's dam, or the bird's nest, without either of these animals having recourse to mathematics. The storing up of the honey is really for man's use, though the animal is unaware of the fact. Dr. Haughton mentioned the case of dogs making sea voyages from

foreign countries, and getting home. But that is not a very good example of animal wisdom. People used to offer up a sacrifice when they were saved from shipwreck, but Bacon says there is no record of those who got drowned. Dr. Haughton does not tell us of the dogs which did not get home. (Laughter.) I have even heard of an inferior animal to the cat doing a much more instinctive thing—they say rats will leave a ship when it becomes unsound. If the rats which live comfortably on board as long as the ship is serviceable, quit the vessel the moment they find it is getting rotten, surely it is a strong instance, I will not say of induction, but of instinct. I do not think there is much reason in the matter. Then with regard to the instances given by Mr. Row, I think one of his inductions was particularly faulty in the instance that occurred when he was on a continental tour, he did not give us a fair case of induction. As to the bad habits picked up by the animals in the Zoological Gardens, Mr. Row says they have all been taught to be beggars, but I do not think there is any evidence of moral deterioration or advancement in that. The animals are not better nor worse than when in a state of nature. But it may be asked, "What is all this about ; what are you going to prove?" Mr. Morshead's paper is very brief, and it is supplementary to a previous one, which defined the contrast between the inferior animals and ourselves more fully. There is, however, a valuable point in the present paper, which gives us a sort of focus for our discussion. I refer to the concluding words, quoted from Lord Brougham, and which must have been written twenty-five or thirty years ago. It is clear that Mr. Darwin's and Professor Huxley's theories as to natural selection, and so forth, were then foreshadowed, with the idea that man may somehow or other have been got out of the monkey. The quotation shows what a very old kind of scepticism these gentlemen are *rechauffing* and professing to be quite new. It is that old notion of Lord Monboddo's, of monkeys losing their tails by sitting, and fowls becoming web-footed by going about on marshy ground. (Laughter.) But Mr. Darwin invents a new theory of natural selection to account for these very same theories, for which there is no foundation. When people cast about for reasons to support a theory, it is very plain that that theory is a preconceived idea. Mr. Darwin elaborates his theory, and makes many converts ; but when he finds that his theory is faulty, he is obliged to prop it up by the new theory of pangenesis. In point of fact, we get nothing but the most old-fashioned theism and infidelity of a former age furbished up and re-introduced as new. (Cheers.)

Rev. J. JAMES.—The case of the king mule mentioned by Mr. Row is borne out by a thousand instances of the kind. I have driven many horses, fast and slow, and sometimes the fastest horse in my team has moped and sulked and refused to go on when kept behind the carriage drawn by another, whereas if it was allowed to run alongside, it would go on all right. The other night the discussion led us to speak of the spirit, the soul, and the body ; and a most true and philosophical dogma was pointed out to have been enunciated by St. Paul, and to have been proved by the facts of our nature ;

showing that those who think they can philosophically discuss anthropology without taking into account the spirit of man were not acting a philosophical, but on the contrary a most unscientific part. Psychology is the science of the $\psi\upsilon\chi\eta$, and $\psi\upsilon\chi\eta$ is in general correctly translated soul, but with a wider meaning than I believe it strictly speaking ought to have. In both the Old and the New Testament the soul is popularly spoken of as including the spirit as well as the soul properly speaking. $\Psi\upsilon\chi\eta$ really means life—that which animates the body, whether it be a tree or an animal. The life in a tree or in a dog, a cat, a horse, a bee, or a man, is that which animates and energizes the body,—that which calls out all the forces of which the physical body is capable. Whatever is necessary for the existence of the body or life, the soul energizes the body to do. Whatever faculties and capacity for action, and whatever powers of activity are in the body, are brought out by the healthy life or soul, the body being thereby enabled to do the thing that is obviously before it at the time. This applies to men as well as to the lower animals. The $\psi\upsilon\chi\eta$ urges us to do everything necessary for our subsistence and defence; the $\psi\upsilon\chi\eta$ enables us to exercise every limb we have and all the nerves and muscles in our body. Take the case of the cat at the door. That is simply a case of the cat having gone in and out over and over again, and therefore is a matter of habit. A much more difficult matter is the case of a cat carried in a hamper for a hundred miles and finding its way back again. There can indeed, strictly speaking, be no operation of reason there, but there is something of a most wonderful character, because the eyes have not been employed. No doubt the cat has an instinctive desire to get back, and this paper speaks of instinct as being a carrying out of such desires, and speaks of the impressions made upon the eyes and ears, and so on. The desire to be in the same place that it was in before would no doubt induce the cat to exert itself to find the way home, and probably it would have to beat about many bushes and roads before it found the way. As to the bees, it has been stated that before they take their direct flight homewards they make two or three circles in the air. Probably in doing so they are feeling in what direction the wind blows, in order to find their way; and though there is an impression of memory involved, there is, strictly speaking, no reasoning at all. The bee simply carries out the natural design or condition of its existence that it should have a cell, and having made that cell, it is its nature to inhabit it and to return to it. As to the dog at Devonport, I do not see anything more striking in that than in the case of the cat going to the door. It is simply a matter of habit. There is memory in it no doubt, but what were eyes given to the animal for except that it should take notice of things? Instinct, in short, is an exertion of the physical parts of the healthy body urged by the healthy life that is in it. I believe the spirit is the intellect, and though the word $\pi\nu\epsilon\upsilon\mu\alpha$ was not generally used in that sense among the classical writers, but rather $\psi\upsilon\chi\eta$, still I think we may fairly, knowing so much more than they did, distinguish between these things. We still talk of the sun rising, although we know that it does not rise; but in scientific discussion we should keep these matters clear. It was said the other night that the word

Spirit in the New Testament ought properly to be understood of that gift of the Holy Ghost which is given to us at our baptism and regeneration ; but I think the answer to this was contained in what was said at the time, that the Holy Ghost could not be otherwise than blameless, and would be preserved blameless, and that S. Paul therefore (1 Thess. v. 23) could not so have used the word.

Mr. R. W. DIBDEN.—You spoke of bees feeling the way the wind blows. But suppose the wind had changed after the capture of the bee, then, according to your theory, the bee would not arrive at home at all.

Mr. JAMES.—The bee would not be wholly guided by the wind. It would have its eyes, and be able to see a long way.

Mr. Row.—It would be a rational act of judgment if they went by the wind. (Hear, hear.)

Rev. Sir TILSON MARSH.—I have listened with much pleasure to the speeches—many of them of great ability—which have been delivered this evening, but I have come to the conclusion that we cannot fix the exact line of distinction between instinct and reason. The two qualities seem to trench on one another, and an instance of that occurs to my mind now. A farmer in Suffolk, who was in the habit of going to the county town where a market was held once a fortnight, possessed a dog. The farmer often went to the town early in the morning, and one winter's morning he went at six o'clock, accompanied by his dog. On the journey the horse slipped and fell, and the master was thrown and broke his leg, and lay helpless in the road. The dog appeared anxious : the farmer made signs to it to go home, but it would not stir. At last it occurred to the master that the animal wanted some authentic testimony of the accident. The farmer's flesh had been wounded, so he took out his handkerchief, dipped it in the blood, and gave it to the dog, which immediately seized it and ran home with its credentials. That is a well-authenticated case, and it does show that instinct at times approximates most closely to reason. But I fall back upon the definition which was given at our last meeting. I believe that the powers of animals all come under one term, as included in the *ψυχή*. The distinctive powers of man, such as generalization, which is evidently confined to humanity, come under the term *πνεῦμα*, and I believe this difference would account for the divine statement made by St. Paul when he speaks of τὸ ὁλόκληρον* as consisting of *σῶμα*, *ψυχή*, and *πνεῦμα*. No doubt there are cases to show that *ψυχή* and *πνεῦμα* have been used at times as if convertible terms ; but if you inquire into that special use, you will obtain an answer to any objection which may be urged. Allowing that there is this trinity in man, the *ψυχή* and *πνεῦμα* express the higher nature, the *ψυχή* being the lower of the two portions, and the *πνεῦμα* being the superior intellectual and spiritual power. There is one

* 1 Thess. v. 23. The word is here used as a substantive neuter, ὁλόκληρον ἅμα, "your whole"; see Wetstein, &c.—"Quod omnibus suis partibus constat"; see Wolfius.—ED.

decisive answer to the objector, for, among other passages, there is that contained in the 15th verse of the first epistle to the Corinthians, where St. Paul defines the nature of the body as it exists here and as it shall exist in the glorious future, speaking of the present body as *σῶμα ψυχικόν* and of the future body as *σῶμα πνευματικόν*, which shows that the *πνεῦμα* is superior to the *ψυχή*. It would be well worth our while to have a paper read on this subject, showing precisely how far the *ψυχή* will account for the powers of animals as exhibited in what we generally call instinct, though it approximates at times very nearly to reason. It is very difficult indeed sometimes to mark the exact line of distinction. No doubt some will think this out and draw up a careful and able paper that might be satisfactory to many people in the present day. The powers of the *πνεῦμα* are capable of infinite expansion, as in the instance of the blessed Third Person—*τὸ Πνεῦμα ἅγιον*. I believe the powers of the *πνεῦμα* are great powers ; indeed, only limited by eternity. (Hear, hear.)

Mr. JAMES.—I appeared to say that in the ancient classics there was no distinction between the soul and the spirit, but it has occurred to me since that in the Latin the word *animus* is never used of life or soul, but of the mind and intellect. *Anima* is constantly used of soul or life.*

Rev. C. GRAHAM.—After our Lord's resurrection, He said to His disciples : " Handle me and see ; for a spirit hath not flesh and bones, as ye see me have." No doubt Sir Tilson Marsh's distinction is correct so far. At our last meeting I took exception to making these distinctions in the use of words in the New Testament, and I adduced two passages on that point which I will not now repeat. I might take another from the close of the epistle of St. James, where it is said that " He which converteth the sinner from the error of his ways shall save a soul from death, and shall hide a multitude of sins." There is no doubt that *ψυχή* there refers to the immaterial spirit which shall be saved from death, for the contrary supposition would apply to it the sense of life, in which the word is generally used—perhaps ten times for once the other way—and the passage would then imply that if the sinner was not led to repentance, it would lead to the death of the body, a consequence which we could not sustain from Holy Scripture. The distinction drawn by Sir Tilson Marsh must not be pressed too closely, because there can be no doubt that *ψυχή* is used sometimes convertibly with *πνεῦμα*, and there is no doubt whatever that the *πνεῦμα* of the New Testament answers to the *Ruach* of the Old Testament and the *ψυχή* to the *Nephesh*. I do not wish to depart or shrink from the position I took in the last discussion. I regret very much that this paper consists more of hints, if I may so call them, than of anything else, for the subject is not exhausted,

* e.g. Juvenal, Sat. xv. 147-9 :—

" Mundi

Principio indulsit communis conditor illis [sc. mutis]
Tantum animas, nobis animum quoque."

and it might have been more thoroughly brought out. I do not deny the teaching of the paper, that there is a most marked distinction between instinct and reason, though I know that the boundaries of the two often seem to run into each other ; but it seems to me that we have ground which we can hold when we come to this great fact, that man has got a conscience—man has got a moral nature. He knows that fact most thoroughly, for when he does anything which is contrary to his moral nature, he condemns, and he cannot help condemning himself. No man would naturally wish to condemn himself. Those doing anything contrary to their own consciences would naturally wish to forget the thing they had done wrongly, and would desire to put away the uneasy feelings awakened in their minds ; but they cannot do it. Now that conscience is universal. You find it everywhere. It is the remark of Dr. Reid, in his *Philosophy*, that you find it—the principle of justice—“as strong within the savage breast as in the civilized Frenchman or Englishman.” If you invade the rights of the savage ; if you make an attack upon his children or his wife ; or if you take away his property, he has as strong a resentment and as burning an indignation against the oppressor as we should have under similar circumstances. He has these feelings in an equal, and perhaps in a superior, degree to the civilized man. Conscience, then, is universal, but there is no innate conscience in the inferior animals. It has been said that they manifest something like a moral nature in the fear which a dog has of being punished : I have lately heard the owner of a dog say that he saw in it the consciousness of shame. But this is in consequence of the fact that the dog has been punished for these things before, and therefore he shows fear and shame. But it is not so with man. Man has a moral nature and a conscience, and the power of that conscience is sometimes so great as to cause men who have violated it to endeavour to get rid of their compunction by putting an end to their own existence. We have had this power exhibited from the very beginning of the history of men. We have Cain himself saying, “every one that findeth me shall slay me,” because he had embroiled his hands in his brother’s blood. This sense of justice is a natural sentiment of man, and the very existence of revenge implanted by God as an instinct in the human breast for our own safety, proclaims with trumpet tongue that in universal man there is a sense of justice and of right and wrong, which implies a moral nature and a conscience, which I am bold to affirm it is impossible for any one to show existing in the inferior animals. Of course I do not refer to man in the very lowest state of barbarism, where neither mind nor conscience is developed. (Cheers.)

The CHAIRMAN.—I should like to offer a few remarks before this discussion is closed. The criticism which appears to me to have been passed on this paper is, that it comes to no conclusion. There has been no real comparison instituted between the psychology of the brute and of man, and we have had no definition of instinct. The answer to the latter objection appears to have been given to us by one of the later speakers, who suggested very properly that perhaps there was no definition of the word “instinct.”

We have been told a number of very interesting anecdotes, showing that certain results are arrived at by animals, which look very much like the results of reason. To what are those results attributable? Do they come from a reason like our own? Hardly. Yet those results seem very remarkable when we compare them with our own modes of action. We speak of an instinctive action in man as one in which there is no conscious exercise of the will. A great majority of such instinctive actions are performed with a view to self-preservation. When we see in ourselves an action performed which we cannot attribute to any rational process of deliberation, we say it is performed instinctively. We apply the same term to the actions of animals which are not apparently results of deliberation, but it is an evasive term. There is a similar use of a term in the word "chance." When we do not know the cause of a phenomenon, we say that chance produced it. In the same way we use the word "instinct" evasively, to show that there is something to produce a course of action, but that we do not know what it is. For that reason there is no definition of instinct. A question was raised about the intellectual powers which animals possess or may possess. It seems clear that they have memory. We are also told that they have jealousy; but these emotions, in the present discussion, we have nothing to do with. Now Aristotle, in sketching out the mental process, says we first begin with memory; a number of memories produce an experience, and from experience settling itself down in the mind arises generalization, which leads to art and science. We may apply this to the question of the scientific and artistic power of brutes. A brute has memory, and can collect into an experience a number of memories; but his powers stop there. He cannot generalize, and there you have the difference between human rationality and the apparent rationality of brutes. The latter possess no power of concentration or induction. (Hear, hear.)

The Meeting then terminated.

MR. MORSHEAD'S REPLY.

I HAVE read carefully through the foregoing discussion without being able to discover that any of the points raised in my paper have been touched.

In reply to Mr. Row I may remark that the words "reason" and "intelligence" are used interchangeably by that careful writer Dugald Stewart. I have not, however, used these terms quite synonymously, but have employed them in their ordinarily accepted meanings. I have not, as a matter of fact, used the terms "reason" and "reasoning" convertibly:—the expression used in the fourteenth section of my paper is "power of reasoning," and it is surely unnecessary for me to state that, under any circumstances, "reasoning" does not always mean "argument," and that when I deny brutes the power of reasoning I do not mean to say that they are unable to argue. I am of course unable to say whether what I call "natural sagacity" may, or may not, include a large share of what Mr. Row calls "reason." As to the statement that I have "confounded reason, intelligence, and other attributes," I should perhaps have more fully apprehended the extent of the confusion if Mr. Row had given a definition of the difference which he holds to exist between reason and intelligence.

With regard to the Chairman's remarks on my paper,—“that it comes to no conclusion;” that “there has been no real comparison instituted between the “psychology of the brute and of man;” and that “we have had no definition of instinct;”—I can merely say that the “conclusion” of my paper is distinctly stated in the six opening lines thereof, and that my view of instinct is clearly laid down both in the present and my former paper. If the Chairman had any objection to my definition, I regret he did not explain that objection. The comparison between the psychology of the brute and man runs through every paragraph of my paper, the object of which is to show that *all* the actions of the brute may be referred to an instinctive source (third section): and I did not think it incumbent upon me to show that *all* the actions of man do *not* proceed from an instinctive source. This view is held—practically at least—by the Fatalists, with whom I purpose dealing in a future paper.

I beg to express my thanks to the Rev. J. B. Owen for his explanation of the sense in which I employed the term “automatic.”

I cannot but think that the value of the discussion would have been enhanced had my paper been sent beforehand to those likely to join in the debate, for then they would not have been under the disadvantage of discussing the paper unprepared.*

* By a new arrangement, in force since the beginning of this year, 1871, copies of the papers to be discussed are distributed a week beforehand.—ED.

ANNUAL GENERAL MEETING,

MONDAY, 23RD MAY, 1870.

THE REV. R. THORNTON, D.D., VICE-PRESIDENT, IN THE
CHAIR.

The CHAIRMAN, in opening the proceedings, said:—It is not my intention to detain you with any lengthy introductory remarks. It is more true in the case of such remarks than in any other, that “brevity is the soul of wit.” The statements now submitted to you will show what progress, if I may use the expression, the Institute has made during the past year, and what work—what real decided work—we have done since our last annual meeting. I will now, without further preface, call on Mr. Reddie to read the report.

Mr. J. REDDIE, the Hon. Secretary, then read the Fourth Annual Report of the Council, which was as follows:—

FOURTH ANNUAL REPORT of the Council of the VICTORIA INSTITUTE, OR PHILOSOPHICAL SOCIETY OF GREAT BRITAIN.

Progress of the Society.

1. The Council desire, in presenting their Fourth Annual Report, to speak quite plainly, as in previous years, to the Members and Associates of the VICTORIA INSTITUTE. They are obliged, therefore, once more to regret that the Society has not increased in numbers, as they would have wished, during the past year. Its business affairs, however, have now been placed upon a better footing, and the arrears of subscriptions for last year are fewer than for 1868.

2. The Council have also the satisfaction of being able to report that they have been enabled to take a decided step towards realizing the seventh object of the Institute. During last year an appeal was made to the Members and Associates for Special Subscriptions for this purpose, which was responded to very promptly and liberally by several Members, as will be seen by the Subscription List appended, showing a total of £384. 19s. Of this sum, £160. 10s. was paid and brought to account in 1869, and £167. 15s. has since been paid. This has enabled the Council to rent the convenient offices we now occupy in 8, Adelphi Terrace, and to open the large room, which is used

for our Fortnightly Ordinary Meetings, as a Reading Room also, daily for the use of the Members and Associates. Several publishers have kindly supplied the New Reading Room with journals and newspapers, and some other periodicals are purchased for the use of Subscribers. The nucleus of a Library may now also be considered as formed, consisting of 186 volumes, ninety-four of which were presented during the last year. This small "Library" is certainly nothing to boast of; but "the day of small things" should never be despised, if the work is good. Considering that the Victoria Institute is now completing the fourth volume of its published *Journal of Transactions*, and has matter partly in type for another volume, it is only natural to reflect how much more liberally other Institutes and Associations which have done nothing at all, or nothing like our Institute, in the production of pure and scientific literature themselves, seem to have been nevertheless handsomely supplied with gifts of libraries of books and with suitable buildings for their occupation.

3. There is nothing, however, like self-reliance. The Council will gladly welcome gifts of books and further subscriptions for the Library and Reading Room. But, if the present Members and Associates will also let their friends know of this additional advantage to Subscribers which the Institute can now offer, and thus induce new members to join, this will be one of the most certain and best means of advancing the interests of the Society, and of enabling the Council to carry out more fully its objects. The central position of the Institute, in the immediate vicinity of Charing Cross, is very convenient, both for town and country members; and, whenever the funds will warrant the outlay, the Council will gladly add new periodicals and books of reference to the Reading Room and Library.

4. As there are now 46 Second-class Associates, who only subscribe one guinea per annum, the Council feel that it will be necessary either to limit the numbers of such subscribers, or to limit their privileges, compared with the First-class Associates and Members, who subscribe two guineas a year; and they would propose that Second-class Associates, resident in London, should not be entitled hereafter to the use of the Library and Reading Room, but only to receive the *Journal of Transactions*.

5. The Council regret to have to report the loss by death during the past year of C. E. K. Butler, Esq., Foundation Member; Peter Carthew, Esq., Life Associate; and of John Kelly, Esq., C.E., V.P. R. Geol. Soc. Ireland, and W. A. Nunes, Esq., Associates.

6. The following is an approximate statement of the changes in Members and Associates during the past year:—

	Life Membs. and Associates.	Membs. (Annual.)	Associates. 1st class. 2nd class.	
Numbers on 1st May, 1869	22	200	14	44
Deduct deaths ...	1	1		2
	<hr/> 21	<hr/> 199	<hr/> 14	<hr/> 2
Changes		-4		+4
	<hr/> 21	<hr/> 195	<hr/> 14	<hr/> 46
Struck off and withdrawn.....		18	2	7
	<hr/> 21	<hr/> 177	<hr/> 12	<hr/> 39
Joined between 1st May, 1869, and 1st May, 1870		16	1	7
	<hr/> 21	<hr/> 193	<hr/> 13	<hr/> 46
			252	
			21	
			<hr/>	
Total.....			273	

Finance.

7. The Audited Balance-Sheet of the Treasurer for the year ending 31st December, 1869, is appended, showing a balance in hand of £47. 6s. 5d. It will be observed that the Balance Sheet has been divided into two parts, one headed "General Account," and the other "Special Fund for Library," &c. The first exhibits the ordinary annual receipt and expenditure, on which there appears to be a balance in hand of £8. 19s. 6d. This balance, however, is struck, exclusive of £63, which was invested upon the recommendation of the Finance Committee appointed last year; which investment has created a temporary overcharge upon the ordinary income of the year 1869 of £54. 0s. 6d. The total amount now invested in the New Three Per Cent. Consols is £359. 2s. 2d. Of the £160. 10s. paid in 1869 of the subscriptions for the Library, &c., only £59. 3s. 1d. was then expended, leaving

£101. 6s. 11d. in hand on 1st January last, the difference between which sum and the balance of £54. 0s. 6d., debtor on the general account, forms the balance of £47. 6s. 5d. in the Annual Balance Sheet.

8. The Council would be glad to find the Annual Subscriptions increased, so as to enable them next year entirely to separate those two accounts, and to meet the ordinary annual expenditure out of ordinary income, without either trenching upon the Life Subscriptions, which have been invested, or the subscriptions to the Special Fund. These subscriptions, however, it is right to explain, were partly for the purpose of meeting the increased annual rent and other expenses, consequent upon the removal into more commodious premises, till the income of the Society should be increased and become fully equal to the ordinary expenditure, which it still barely now is.

9. It will also be observed that the past year's expenditure contains five quarters' rent, owing to a more prompt payment on removal; also an increased amount for advertising—it having been frequently urged upon the Council that the Institute was not made sufficiently known to the public; and there is also an item of £20. 1s., being the balance of a loss which it was thought desirable to write off, after every endeavour had been made to secure its recovery.

10. The arrears of subscriptions are now as follows:—

	1866.	1867.	1868.	1869.
Members	1	9	14	17
1st Class Associates...		4	1	3
2nd „ „ ...		4	5	9
	—	—	—	—
	1	14	20	29

The Council have refrained from at present striking off the names representing these arrears, as some have been distinctly promised to be paid, and some are believed to be left unpaid on account of those by whom they are due being abroad. To all, the Journals have been regularly sent, for periods for which subscriptions are due, without being returned; and the Council trust they will be saved the painful duty of reporting any of these names as defaulters, to be struck off the rolls of the Victoria Institute. They propose, however, that it shall be considered their duty, at their discretion, to strike off the names of Members or Associates who are more than two years in arrear, and to publish such names in future Annual Reports when they deem this course advisable.

11. The estimated ordinary assets of the Society for the current year, exclusive of arrears and of new subscribers, are as follows :—

193 Members, at £2. 2s.	...	...	£405	6
13 1st Class Associates, at £2. 2s.	...	...	27	6
46 2nd „ „ at £1. 1s.	...	...	48	6
<hr/>				
252 Annual Subscribers.				
21 Vice-Patrons, Life Members, and Life Associates.				
(Dividends on £359. 2s. 2d. Three per Cent. Stock)	...	...	10	11
273 Total.			<hr/>	
			£491	9

Meetings.

12. The following is a List of the Papers for the present Session, viz. :—

- De Providentiâ Divinâ; or, the Respective Spheres of Providence and of Nature's Laws.* By the Rev. DAVID GREIG, M.A., M.V.I. (Read and discussed! Nov. 15th and Dec. 6th, 1869.)
- On the Origin of the Negro. By the Rev. J. H. TITCOMB, M.A., M.V.I. (Jan. 3rd, 1870.)
- On the Testimony of Philosophy to Christianity as a Moral and Spiritual Revelation. By the Rev. C. A. ROW, M.A., M.V.I. (Jan. 17th.)
- On the Numerical System of the Old Testament. By the Rev. R. THORNTON, D.D., V.P. (Feb. 7th.)
- On Spontaneous Generation; or, the Problem of Life. By the Rev. Professor KIRK, M.V.I. (Feb. 21st.)
- A Demonstration of the Existence of God. By the Rev. J. M'CANN, D.D., M.V.I. (March 7th.)
- Atheism Confuted by a New Argument; or Why Man must believe in God. By JAMES REDDIE, Esq., Hon Sec. V.I. (March 7th.)
- On Geological Proofs of Divine Action. By S. R. PATTISON, Esq., F.G.S. (March 21st.)
- Discussion on Mr. Reddie's Paper on Atheism. (April 4th.)
- On True Anthropology; or, the Spiritual, Mental, and Physical Constitution of Man. By W. HITCHMAN, Esq., M.D., M.V.I. (April 18th.)
- On Comparative Psychology. (Second Paper.) By E. J. MORSHEAD, Esq., Hon. For. Sec., V.I. (May 2nd.)
- On the Argument from Design, as illustrated by the Structure of the Human Eye and of the Cell of the Bee. By the Rev. WALTER MITCHELL, M.A., V.P. (Being the Annual Address, May 23rd.)
- On Civilization, Moral and Material. (Also in reply to Sir John Lubbock, on "Primitive Man." By J. REDDIE, Esq., Hon. Sec. V.I. (June 6th.)

13. The Council regret that they have not always been able to give as long previous notice of papers to be read as they would desire. They can only refer to the previous Annual Reports on this subject, and remind intending contributors that it depends upon them whether the Council can do more in this matter. At the same time it is only fair to observe that most Societies are no better off than ours (if so well) in this respect; and that no other Society, it is believed, can compare with ours in the fulness of the reports of discussions.

14. The meetings this Session have been, as usual, very well attended, and at some of them the leading representatives of the prevalent atheistic opinions were admitted, and took part in the discussions; and they have since very frankly acknowledged, in their own organs, the fairness and courtesy with which they were listened to, and their arguments met in the Institute.

Publications.

15. Part 15 of the *Journal of Transactions* is now in the course of being printed, and will be issued next month. No. 16 will also be published before next Session commences, completing the fourth volume of our *Journal of Transactions*, and the publication of all our Papers and Discussions up to the commencement of the present Session.

Conclusion.

16. Now that the Seventh Object of the Institute is being realized, the Council can only express an earnest hope that this will give a fresh impulse to the Institute, and lead to a large accession of new members. With comparatively small means much good work has already been accomplished; but the numbers of the Society should at least be doubled, before the Council will cease to have anxieties as to the expenditure arising from the publication of a large volume of *Transactions* every year. Several influential persons interested in the maintenance of revealed truth, who have freely acknowledged how much the Institute has already accomplished, have nevertheless failed to join us—partly because of other pressing claims upon them, which we no doubt all more or less feel; but partly, also, apparently, because the Institute has succeeded, and has been able to do so much. This is scarcely generous, and not quite fair; and the Council feel it their duty to remind all such that our enemies know well how to concen-

trate their forces and to support one another by combination ; and as no other Society can point to such steady and systematic and permanent work as ours, for the opposing of the false philosophy, pseudo-science, and rampant scepticism of the present time—all who feel that this work should be done, should join our ranks, that our field of usefulness may be still more extended, and the labours of the VICTORIA INSTITUTE be still more successful.

Signed on behalf of the Council,

R. THORNTON, D.D., *Vice-President.*

W. N. WEST, Esq., the Treasurer, then read the Annual Balance Sheet as follows :—

FOURTH ANNUAL BALANCE SHEET, from 1st January to 31st December, 1869.

[illegible]

We have examined this account with the books and vouchers,
and found it correct.

	{ E. GARDINER FISHBOURNE,	{ Auditors.
	{ F. PETRIE,	
	W. N. WEST, Treasurer.	

DONATIONS TO SPECIAL FUND.

Paid prior to 31st December, 1869.

	£.	s.	d.
W. N. WEST, Esq.	2	2	0
G. WILLIAMS, Esq.	1	1	0
A. J. WOODHOUSE, Esq.	3	3	0
Rev. Dr. RIGG.....	1	1	0
H. W. BLEBY, Esq., B.A.	5	0	0
I. BRAITHWAITE, Esq.	25	0	0
R. MULLINGS, Esq.....	10	0	0
T. PROTHERO, Esq.....	3	3	0
Dr. J. H. WHEATLEY	10	0	0
S. MORLEY, Esq., M.P.....	100	0	0
	<u>£160</u>	<u>10</u>	<u>0</u>

Paid during 1870.

	£.	s.	d.
ROBERT BAXTER, Esq.	52	10	0
W. McARTHUR, Esq., M.P.....	21	0	0
JOHN NAPIER, Esq., <i>Glasgow</i>	10	0	0
W. VANNER, Esq.	10	0	0
Vice-Admiral HALSTED	5	0	0
S. PETRIE, Esq., C.B. (the late)	5	0	0
Rev. J. H. A. WALSH, M.A. (the late)	5	0	0
Rev. W. NIVEN, B.D.	5	0	0
Rev. W. H. BATHURST, M.A.	2	2	0
Captain JASPER SELWYN, R.N., <i>Tring</i>	3	0	0
J. A. FRASER, Esq., M.D., I.G.H.	5	0	0
T. W. MASTERMAN, Esq., <i>Reading</i>	5	5	0
W. H. INCE, Esq.	2	2	0
Rev. Prebendary KEMBLE, M.A.....	5	0	0
A. V. NEWTON, Esq.....	3	0	0
Rev. J. B. OWEN, M.A.	3	0	0
CHARLES BROOKE, Esq., M.A., F.R.S.	5	0	0
Rev. A. DE LA MARE, M.A.	3	3	0
JOHN SHIELDS, Esq., <i>Durham</i>	2	2	0

Carried forward..... £152 4 0

	£.	s.	d.
Brought forward.....	152	4	0
S. D. WADDY, Esq., B.A.....	5	5	0
E. CHANCE, Esq., J.P. <i>Malvern</i>	2	2	0
The Very Rev. the DEAN OF CANTERBURY	1	1	0
J. LEWIS, Esq., R.N., <i>Southampton</i>	1	1	0
Rev. C. A. ROW, M.A.	1	1	0
Rev. J. H. TITCOMB, M.A.	1	1	0
G. C. HARRISON, Esq.	1	0	0
Rev. C. SKRINE, M.A.	1	0	0
J. SHAW, Esq., M.D., <i>Boston</i>	1	0	0
W. PAYNE, Esq.....	1	0	0
	<hr/>		
	£167	15	0
	<hr/>		

ADDITIONAL SUBSCRIPTIONS.

	£	s.	d.
A. McARTHUR, Esq. (promised)	42	0	0
Rev. R. THORNTON, D.D.	3	3	0
Rev. G. R. BADENOCH	1	1	0
	<hr/>		
	£46	4	0
	<hr/>		

Total £374 9 0

Mr. T. CLEGG.—I move—

“That the report of the Council, now read, be received, adopted, printed, and circulated among the members and associates.”

I almost feel an intruder here; but having done nothing hitherto for this Institute, and being here on this occasion, I could scarcely refuse to move this resolution when asked to do so. It struck me while the report was being read, that the plan which you contemplate, by way of coercion, of publishing the names of those who do not pay their subscriptions, is not a wise one. (Hear, hear.) I think a preferable plan would be to make the Society and its objects more widely known. I think, for instance, that you might visit Manchester, Birmingham, Bristol, and other large towns, and hold meetings. I am sure you would find many gentlemen who would be glad to give you the use of their drawing-rooms for that purpose. Long ago I offered to receive Admiral Fishbourne, and to give my assistance in Manchester, and I think that if members were sent from this Institute into the provinces in that way, and made our objects more widely known, we might get an abundance of subscribers. That would be far better than the adoption of any plan of coercion by publishing the names of defaulting subscribers; to do so is always objectionable. (Hear, hear.)

Mr. LINDSAY, of Belfast.—I have much pleasure in seconding the motion, and I hope the Institute will be more successful in the future than it has been in the past. (Hear, hear.)

Mr. REDDIE.—I may say that it was not intended to publish the names of non-paying subscribers of an ordinary kind, but there are a few subscribers who have for a very long time neglected to pay, although they have accepted the copies of our *Journal of Transactions*. In one instance, where the supply of our journal had actually been stopped, the member wrote to me asking that the parts in arrear might be sent to him, and that he would pay up his subscriptions from the beginning. The books were sent to him, but the subscriptions due have never come. (Laughter.) The proposal in the report has been made with some caution. It is not suggested that defaulting subscribers should invariably be gibbeted in this way, but only that it would be a proper course to pursue in a case like that I have mentioned. I am anxious that it should not be supposed that we would make use of the discretionary power we ask for without great consideration. Although we have two or three arrears of subscriptions, dating from 1866, we have as yet taken no steps of the kind. As to the proposal to go to Manchester, and Mr. Clegg's very kind offer to Admiral Fishbourne, it was proposed that I should go down with him, and if I could have spared the time and expense I would have been happy to have done so. The only practicable way, however, of arranging this matter is for Mr. Clegg to become our Honorary Local Secretary for Manchester. (Hear, hear.) Let him work down there, and then, when we have sufficient funds, some of those gentlemen who have read papers in the Institute might be asked to go down and deliver lectures, giving a sort

of *résumé* of what had taken place during the session. We have already had applications to give lectures of this kind, and it is indeed part of our scheme that, after subjects have been discussed here, lectures of a more popular kind should be delivered, giving the gist of our discussions. Nothing could be better than a lecture of such a kind on some of the papers and discussions we have had on the Mosaic cosmogony—indeed the work is already almost done in Professor Kirk's valuable paper. (Hear, hear.)

Rev. Dr. C. DEANE.—With regard to the publication of the names of defaulting subscribers, I think we shall be quite safe in leaving the matter in the hands of the Council. I am sure that they will do what is right. (Hear, hear.) But there is one paragraph in the report to which I feel bound to allude: it is that referring to meetings. Now as regards the attendance of individuals holding atheistical opinions, I want to know at whose invitation those gentlemen came. Were they invited by the Council or by individual members? If by individual members, of course we have nothing to say to it; but if by the Council, I should like to express my opinion on the subject.

Mr. REDDIE.—The first of the occasions to which Dr. Deane refers was when Mr. Austen Holyoake attended to hear a paper on human responsibility by Dr. Irons. It was one of a series in direct refutation of atheism, and at Dr. Irons's own desire Mr. Holyoake was requested to attend. I believe he sent the invitation himself, and therefore it emanated from an individual member acting with the best intention, and whose paper proved how untenable the position of atheism was. I must say that I think all who were present when Mr. Holyoake spoke must have felt that the cause of truth was advanced and the cause of atheism suffered.

Dr. DEANE.—The papers read when I met these gentlemen were not those by Dr. Irons.

Mr. REDDIE.—No. The occasion I have referred to was the first.

Dr. DEANE.—How did they come on the other occasions?

The SECRETARY.—They applied for leave to come.

Mr. REDDIE.—Having once got their foot in, they applied for leave to come here to hear a paper on "Demonstration of the Existence of God." The matter was never brought before the Council, but I think it was very proper for Mr. Aubrey to send them tickets. If I had been in his place I should have sent tickets, and I am sure that if the Council had been asked they would have sanctioned such a course. (Hear, hear.)

Dr. DEANE.—That being the case, I think we ought to protest against making this Institution a platform for people we believe to be infidels, and thus giving them an opportunity of proclaiming their views. I think that more harm ensues from the publication of infidel views than good is gained by the apparent refutation of those views in a limited Society like this, and I think that to admit such discussions in our rooms is not carrying out the original objects of the Victoria Institute. I feel a great difficulty in bringing this matter forward, and only do so as a matter of stern duty. I referred to the subject once before, and did not then get what I thought a satisfactory answer, and I therefore came here to-day for the purpose of bringing

the subject before the general meeting, in order that we might come to some decision upon it. Many people may think it desirable to have these discussions, but I am not one of them, and I think we ought at once to learn whether it is the intention of the Institute to admit these discussions, and to open our rooms to these sceptics, who, it appears, come here in the light of a sort of honorary membership.

MR. REDDIE.—No, no.

DR. DEANE.—At all events they get a footing here, and are immediately free of the rooms.

THE SECRETARY.—In each case they applied for special leave to come.

REV. W. WEBSTER.—I entirely approve of inviting Mr. Holyoake here. I was brought up in the orthodox evangelical faith, and am strongly attached to those principles with which the names of Lord Shaftesbury and others are associated, and I thank God for it. I hold very strongly the doctrine of the Trinity and the other points of our faith, to which I frequently apply the words of the Collect for Trinity Sunday, "We beseech Thee to keep us steadfast in this faith." I think it desirable that there should be an arena like this in which those who have not been brought up with the same advantages of education which we have enjoyed, and who have had no opportunity of knowing the truth as it is in Jesus and in the Word of God, should have the advantage of meeting with others of intelligent mind and religious education, and hearing what they have to say. I understand that these visitors have occasionally taken part in the discussions of our Institute. Whether they have been invited by individuals or by the Council, I am thankful that they have been present to shoot their arrows and state their arguments, and to go away stating that they have been treated with fairness and courtesy, because, although I may lament their condition with reference to the world to come,—through their not having that faith which alone can make a man worthy of the name of Christian,—still I would always treat them with that courtesy and respect which is an essential principle of our own common Christianity. For my part I feel quite satisfied with the conduct of our Council, not in inviting these gentlemen, but in letting them know when there would be a particular paper read in which certain of their tenets would be attacked. The Institute is most valuable as furnishing an arena for true inquiry, and open, candid, and fair discussion, not fearing for the result. We do not expect to gain an immediate victory over those whose minds are unfortified by religious education, but we do not fear the inquiry, even though we may not find in it all that is orthodox.

MR. REDDIE.—I should like to make a few remarks with reference to the misapprehension under which Dr. Deane is labouring. Every member of the Institute is entitled to bring friends to our meetings, and all who are present are invited to take part in the discussions, being subject, of course, to the rules of the Society and to the ruling of the Chairman, with whom it rests that good order is preserved and no impropriety in the language of those who speak tolerated. Mr. Bradlaugh sent a challenge to the Society to have that kind of discussion which one would imagine to have been present in Dr.

Deane's mind. I accepted the challenge for myself or for any other individual member of the Institute, but not on behalf of the Institute itself, because we have never intended that our platform should be a platform for those who read papers on the other side. I should be ashamed if we were afraid to hear what an atheist has to say, so long as he observes propriety, and would have been sorry when any holding such views had been among us if they had not been invited to speak, and to clear up their difficulties if they could. (Hear, hear.)

Rev. W. MITCHELL, V.P.—I was in the chair on more than one occasion when those gentlemen were present, and I always endeavoured, so far as it was in my power, to carry out the rules of the Society. We limit membership to persons professing Christianity, but not the friends of our members. Every member has the right to introduce a friend at our meetings. When the gentlemen alluded to were present I did not know that they came in any other form than by the invitation of some member; but when a paper has been read and when discussion has been invited, I have always understood it to be the rule of the Institute that not only the members of the Society were to be invited to join in the discussion, but also any strangers that might be present, and we have sometimes found the great value of that rule. (Hear, hear.) With regard to one of the gentlemen who has been referred to, a very distinguished legal friend of mine was present on one occasion, and he was quite astonished at the manner in which Mr. Bradlaugh spoke. Mr. Bradlaugh carefully refrained from expressing anything that could have given the least offence to a Christian mind, and he seemed most thoroughly to appreciate the courtesy with which he was received and the fairness with which all the arguments were stated. (Hear, hear.)

The motion for the adoption of the report was then agreed to.

Dr. DEANE.—I beg to move :—

“That the thanks of the members and associates be presented to the Council and officers of the Institute for their efficient conduct of the affairs of the Victoria Institute during the past year.”

I have much pleasure in moving this resolution because I seem to have been casting a slur on the members of the Council. It was very far from my intention to do so; however, I will not discuss the subject further, though I adhere to my own views. I have observed the admirable way in which our Council and officers have conducted the affairs of the Society, and therefore have much pleasure in moving this resolution. Their attention to the wishes and wants of the members increases year by year; they make a good use of their experience; and we find that each succeeding year brings us additional advantages, one of the last and not the least of which has been the removing from our late not very conveniently-situated offices to the rooms we now possess, which are admirably situated and well adapted for our meetings. Then, again, at one time we went to our meetings feeling uncertain as to what we should hear, but now we have an admirable programme, which is adhered to with unusual fidelity. All these things, improving, as they do,

year after year, give us great promise of what is yet to come, and I think we have reason to congratulate ourselves on being so admirably officered. (Hear, hear.)

Mr. G. J. SCALES.—I have great pleasure in seconding this motion.

The resolution was then carried unanimously.

Mr. WEST.—All I can say is that I and the rest of the Council feel exceedingly obliged to you.

Mr. REDDIE.—I am extremely obliged to you for passing this vote so cordially, especially after the discussion we have just had. I had no feeling in that matter—the question was one involving a very fair difference of opinion, and upon the whole I do not know that the discussion which has taken place is one to be deprecated.

Rev. Sir TILSON MARSH.—I beg to move :—

“That the following gentlemen be the Council and officers for the ensuing year :—

President.

The Right Honourable the Earl of Shaftesbury, K.G.

Vice-Presidents.

Philip Henry Gosse, Esq., F.R.S.

Rev. Walter Mitchell, M.A.

Charles Brooke, Esq., M.A., F.R.S., F.R.C.S., &c.

Rev. Robinson Thornton, D.D.

Honorary Treasurer.

William Nowell West, Esq.

Honorary Secretary.

James Reddie, Esq., Hon. Mem. Dial. Soc. Edin. Univer.

Honorary Foreign Secretary.

Edward J. Morshead, Esq., H.M.C.S.

Council.

Robert Baxter, Esq. (*Trustee*).

Rev. A. De la Mare, M.A.

Rear-Admiral E. G. Fishbourne, C.B.

R. N. Fowler, Esq., M.P. (*Trustee*).

W. H. Ince, Esq., F.L.S., F.R.M.S.

Alexander M'Arthur, Esq., F.R.G.S.,

F.A.S.L.

Alfred V. Newton, Esq., F.A.S.L.

William M. Ord, Esq., M.B.

Rev. J. B. Owen, M.A.

Captain F. W. H. Petrie, F.G.S.

S. D. Waddy, Esq., B.A., Barrister-at-Law.

William Vanner, Esq. F.R.M.S.

Alfred J. Woodhouse, Esq., F.R.M.S.

Rev. J. H. Rigg, D.D.

Rev. C. A. Row, M.A.

Rev. J. H. Titcomb, M.A.

Rev. M. Davison.

H. W. Bleby, Esq., B.A.

J. A. Fraser, Esq., M.D., I.G.H.

Rev. G. Henslow, M.A., F.L.S.

Rev. Charles Graham.

N. Learoyd, Esq.

T. W. Masterman, Esq.

Secretary.

W. H. S. Aubrey, Esq.”

The names of many of these gentlemen are personally known to me, and I can testify to the especial fitness of many of them to hold office in this Society, and have no doubt that those who have been selected to be their coadjutors are equally fit. In the present day it does seem very desirable that there should be a society for the purpose which this Institute has in view. The scientific world are rapidly crystallizing facts in connection with the phenomena which this world presents, and it is of great importance that religious men should stand up to show that there is complete harmony between these facts, so far as they are proved, and the statements of divine revelation. (Hear, hear.) We know that the human mind is very active in the present day, and that many are led to doubt, and it is important that we should stand forward and assist those minds in solving their doubts wherever they are honest. I believe that this Institute will afford in the future, as it has in the past, a valuable platform on which the complete harmony between the facts of the material world and the statements of divine revelation will be carefully and clearly exhibited. (Hear, hear.)

Rev. J. JAMES.—I have great pleasure in seconding this motion. Although the names of many gentlemen in this list are not known to me, yet from past experience I feel such confidence in the management of the Society that I am quite sure the list has been well chosen. I am glad to have had an opportunity of learning to-day a feature in our Society of which I was not cognizant before; namely, that we have sometimes had persons present at our meetings with whom the Institute really does hold a contention. I have often been asked by my friends—"Do any of those persons with whom you contend make their appearance at your meetings?" and I have not been able to give a reply; but I am glad to possess the information which I have received to-day, because I think it is a real advantage that these people should come. This is a contentious institution, contending with those who fight against the truth; and if there are any who question our faith, let them appear and openly state what they have to say. (Hear, hear.) The oftener the better for the advancement of truth. I rejoice that we have that by-law or rule in the Society which enables these gentlemen to come and take part in our discussions. I have great pleasure in seconding the motion.

The resolution was then agreed to.

Mr. REDDIE.—In most societies they ballot for the Council, but we have not yet arrived at that stage; but we have reached the time when any member of the Institute wishing to criticise the working of the Council or to bring forward any question as to our mode of management, can do so. Allow me to add that our President, Lord Shaftesbury, intended to have been here to-day, but Lord Carnarvon's motion in the House of Lords prevents him.

[After an interval, during which no member rose, the annual address was delivered (almost entirely extempore) by the Rev. Walter Mitchell, Vice-President, the subject being "On the Argument from Design, as illustrated by the Structure of the Human Eye and the Cell of the Bee." Hitherto the author's illness has interfered with its publication. The vote of thanks was

afterwards moved by Major-General R. F. Crawford, seconded by the Rev. G. Henslow, M.A., and acknowledged.]

Mr. T. W. MASTERMAN.—I have much pleasure in proposing—

“That the thanks of the meeting be given to the Rev. Dr. Thornton for presiding on this occasion.”

Mr. G. C. HARRISON.—I have much pleasure in seconding the motion.

It having been carried,

The CHAIRMAN said,—I thank you very much for this vote, but I cannot help saying I should have been very glad if our noble President had been here to take my place. I know Lord Shaftesbury always disclaims being a scientific man ; but from the remarks he has made when present, I can only say that we should never have discovered his want of scientific attainments if it had not been for his own confession. It has been a labour of love for me to take the chair, and I shall always endeavour to do all that lies in my power to promote the objects of this Institute. (Cheers.)

The meeting then terminated.

ANNUAL DINNER.

The members and associates, with their friends (numbering fifty-four), afterwards dined together at the Freemasons' Tavern. The President, being unable to be present, the Chair was taken by Robert Nicholas Fowler, Esq., M.P. ; the Vice-Chair by W. M'Arthur, Esq., M.P. Grace was said by the Rev. R. Thornton, D.D., and after dinner a thanksgiving was chanted by a choir, under the direction of Mr. Burgess.

The CHAIRMAN then rose and proposed the toast of “the Queen.” (Cheers.)

The toast was loyally responded to.

Air—“God save the Queen,” rendered by the choir.

The CHAIRMAN.—Before proposing the next toast, I have to express the great regret which I feel, and which I am sure those around me participate in, at the absence on this occasion of our illustrious President. We all hoped that we should have had the honour of being presided over this evening by a noble lord who is endeared to every one taking an interest in the cause of religion in this country, and who is always ready to support every movement having for its object the glory of God and the good of his fellow-men. (Cheers.) He is detained at that assembly, of which he is so great an ornament, and, under these circumstances, as we are deprived of his presence, unworthy as I feel to take the position, the duty of occupying this chair has devolved upon me. I have, therefore, to ask your kind indulgence, and to add that, inasmuch as most of those who will address you this evening have had the opportunity of expressing their views at the annual meeting held to-day, we shall do well to be brief in our speeches, more particularly as

we are to be favoured with some music. (Hear, hear.) In the first toast you have expressed your attachment to our beloved Sovereign ; I now ask you to drink the health of those who are nearest and dearest to her, "the Prince of Wales and the rest of the royal family." (Cheers.)

The toast was duly honoured.

Song—"Alice."

Mr. W. M'ARTHUR, M.P.—I have great pleasure in proposing the toast of "the Army, the Navy, and the Volunteers." (Cheers.) I am sure I need not say one word on behalf of the English army ; it requires no eulogium from me. Its noble deeds are chronicled in the brightest pages of English history, and I may add that the army of England has ever been distinguished as much for its humanity as for its bravery. (Cheers.) The navy of this country has always been the popular service, and deservedly so. (Hear, hear.) We have been wont to talk and sing of the wooden walls of old England ; but time, which produces such wonderful changes, has substituted for those wooden walls, walls of iron. (Hear, hear.) There is one consolation, however, and that is, that although the material of our ships may have changed, we still have in the men the same hearts. (Hear, hear.) As to "our volunteers," they are a comparatively new, but not less important element in our defence. I trust the government of the country will always feel it to be their duty to foster the volunteer force by helping it liberally in all matters in which its efficiency may be still further promoted. (Hear, hear.) With regard to all three services, I trust that I only express your sentiments when I say may they ever be defensive forces,

"With hearts resolved and hands prepared
The blessings we enjoy to guard." (Cheers.)

Peace has its victories as well as war, and, in an assembly of this kind, I need not say how important peace is to the diffusion of all those blessings we delight to cherish, to the advancement of art and science and every other good. I have pleasure in coupling with this toast the names of Major-General Crawford and Admiral Halsted. (Cheers.)

The toast was drunk with the usual honours.

Glee—"Soldier's Love."

Major-General CRAWFORD.—It has been very properly remarked that peace has her victories as well as war, and I cannot help feeling that there is a very great mission for the military service in time of peace. You can scarcely find a single institution in this country with which some military or naval man is not actively associated. (Hear, hear.) The military over all the world—if properly instructed, so as to ascertain and collect facts belonging to the various departments of science on which we could generalize and form our conclusions—would be valuable aid in the work of this Institute. I think that the British Army ought to receive a more technical education. Too much time is taken up with other matters. I do not desire to undervalue the classics ; they open up to us the wisdom of the ancients, but I think that, at the present moment, when there is such a demand for the best.

men, and so wide an area to be occupied, education should be made infinitely more technical, and the natural sciences should be introduced to a greater degree than they now are. Many men can tell the root of a word, or can make Greek and Latin verses ; but, at the same time, what we want, in the urgency of these times, when, as has so often been said, we are talking to each other by electricity, painting by the sun, and travelling by steam, is, that young men should know something of the age in which they live, and have an education suitable to it. (Hear, hear.) I consider that every young man ought to be able to lay down the latitude and longitude of any spot on sea or land, know something of geometry, of metallurgy, of the geographical and geological formation of particular countries, be able to map out the outline of a country, and, also, give us more or less the various geological strata, and the indications they afford. (Hear.) If young men were so taught, they would have greater advantages than at present. I am aware that, primarily, their education ought to be with reference to their particular profession, but at the same time they ought to have an education that would suit them to the numberless uses to which the army ought to be applied. But, owing to the recommendations of recent Royal Commissions, we have gone back a generation. The cultivation of Greek and Latin will scarce enable us to talk to our neighbours upon the Continent, with whom we are brought into contact, and I do contend that it is of the utmost importance that the army should be prepared for all exigencies. I beg to thank you for the kind manner in which the toast has been received. (Cheers.)

Admiral HALSTEAD.—The Navy has hitherto been a reality in the defences of this country, and must continue to be so if we are to maintain our present position. I can only hope my compatriots may ever be deemed worthy of the kindly feeling that has been expressed towards them.

The CHAIRMAN.—I now rise to propose the toast of the evening. I am glad of the opportunity of testifying the opinion I entertain of the great importance of the Victoria Institute. There is one point on which I trust all present are agreed, and that is the deep sense we entertain of the importance of the truths of our holy religion—that religion by which I trust every one of us is guided in life, and will be comforted in death. (Hear, hear.) In these days of free inquiry, and when everything is cavilled at, we unfortunately see men of great intellect standing up and attempting by scientific deductions to shake our minds with reference to the truths of revealed religion. Now I think we shall all agree that nothing can be more fatal, no danger can be more serious to the religion, and in fact to the very existence of this country than the promulgation of baseless theories and errors, such as those to which I have referred. It is to oppose such theories and errors that the Victoria Institute has been founded. Now we all have faith in the great truths of our holy religion ; we all believe that religion to be founded on the Revelation of that God Who is the great architect of the universe ; and believing as we do that the God of Nature is also the God of Revelation, we believe that the two are perfectly harmonious, and that if, upon any particular point, we may for a short period

not be able to reconcile Science and Religion, we nevertheless maintain that this is owing to our own imperfect understanding of Science, and that as Science progresses we shall make discoveries which will bring it into complete harmony with Religion. (Hear, hear.) This is what we all believe, and it is to attain such a consummation that the Victoria Institute has been established. I rejoice to know that the Institute receives the support of many of the able thinkers and powerful minds of the day. (Hear, hear.) When we have before us the evidence of the greatest philosopher of whom this or any other country can boast,—I refer to Sir Isaac Newton,—and find him saying at the close of his long career and in reference to his great discoveries in Science, that he was only like one who stood upon the seashore and picked up a few pebbles, while the vast ocean of truth remained unexplored before him, we cannot but feel that greatly as Science has progressed since his day, it is nevertheless as yet but in its infancy. We ought, therefore, when anything appears to stand in the way of the great truths of our religion, to feel that it is our duty to wait for further information, and that it is not for finite man to pretend that his discoveries can obstruct the truths which have been revealed to us by an infinite and all-wise Creator. (Hear, hear.) Now this being the position which the Victoria Institute has taken up, and deeply impressed as we all are with the truths of Revelation, humbly believing as we do that God is greater than man, and that He giveth not account of any of His matters, it is our duty, in every way we can, to strive to support this Institution. I believe it is doing one of the greatest works that can be undertaken in the present day. (Cheers.) I believe that the Institute is pre-eminently required at the present time ; I believe it has been raised up in the ordering of Providence to do a great work ; I believe that, brief as its history has hitherto been, nevertheless its labours have borne fruit already. I rejoice in the hope that, as time progresses, we shall see much greater results from its efforts. I have great pleasure in proposing, “Prosperity to the Victoria Institute,” coupling with that sentiment the name of the Rev. Dr. Robinson Thornton, a Vice-President, and one who is so well known to all of us for the active part he has taken in promoting the success of the Society. (Cheers.)

The toast met with a hearty reception.

The choir sang a glee.

Rev. R. THORNTON, D.D., rising amid loud cheers.—I am much gratified that you should think this Institute meets one of the needs of the present day. This is exactly what I have always felt from the first moment that I saw the advertisement announcing its formation. I find that when people wish to accomplish a particular object, be it moral or immoral, they league together ; for instance, when they wanted to overthrow the corn laws, a corn-law league was established ; if they desire to accomplish a certain social object, they league together ; if they want to upset a certain law, which some persons may deem to operate unjustly, they league together that they may attain their purpose ; and so, also, they league together if they wish to obtain some benefit. Now, I say it would be a shame to Christian England

if people could not be found to league together for God. (Cheers.) Why, Sir, it is my own belief, and I know it is the belief of everybody here, that we Englishmen have risen to our present proud pre-eminence—for a proud pre-eminence it is—because of our attachment to true religion and the Word of God. (Cheers.) I believe that the prosperity of England is linked with her religion, and that if that religion fail, her prosperity must also fail. (Hear, hear.) I know that these sentiments are not very palatable with some of the world without; but I hold them, nevertheless, and unhesitatingly reiterate them. Well, Sir, we league together for God—we league together to endeavour to support His Word—to endeavour to show scientific infidels that the science upon which they rely is a reed which will run into their hand and pierce them. (Hear, hear.) No one could have listened to the eloquent address with which we were favoured a few hours ago at our annual meeting without feeling that those who on scientific grounds assail the Word of God, do indeed take up a weapon which will eventually run into their hands. We were shown, from the design apparent in the human eye and in the bee-cell, that it is impossible to resist the fact that there is a creative intelligence presiding over creation, which we with our puny intellects cannot approach, except by the method of adoration. But scientific infidels tell us the reverse. They speak of the dignity of the human intellect, they tell us of the greatness of man, and of the exalted place which he is soon about to assume in the universe, when the trilobite will be metamorphosed into an angel. (Laughter.) I do not believe such nonsense myself; no more does the Victoria Institute. (Hear, hear.) We look upon ourselves as the humble servants of a Superior Intelligence, bound to use the wondrous intellect which He has bestowed upon us in His service and to His glory. Our scientific opponents are continually laying their fingers on what they suppose to be the weak points in our case. They reiterate their objections again and again, and when we have refuted them once, they come back to the same charge again. They are not honest enough to take a point as being proved or disproved, but after each defeat they hark back again to the point on which they have been beaten. But, Sir, we are ready for them: we have met them once, and we will meet them again. It is perhaps a matter of regret among those who are members of this Institute that we do not find upon our list as many titled names as we could wish. We ask in vain, “Where are the bishops? where are many of those who make such strong public profession of their attachment to our principles?” In that word, which it is our business to defend, I find some allusion to such a shortcoming, for it says, “that not many wise after the flesh, not many mighty, not many noble, are called; but God hath chosen the foolish things of the world to confound the wise, and God hath chosen the weak things of the world to confound the things which are mighty.” Therefore I congratulate myself on the fact that this Institute is making some way—that, humble as each of us may be, we are doing some work that may tell in the great battle that must eventually be fought between truth and falsehood, between right and error. (Hear, hear.) There is one other thing I can congratulate myself and the Institute upon, and that is, the harmony

that invariably reigns among us, not only in our Council, but at our meetings, whether for discussion, or on occasions of this kind, when we are assembled for social intercourse. I know that there are around me many persons differing from myself and from one another on minor points, and even those who might, perhaps, should a certain tocsin be sounded, be found unhappily on different sides in the great questions, political, religious, and social, which agitate us at the present day; yet at the same time we have among us no discord, but peace. We are one—united in the determination to uphold those sacred writings which for us contain all blandishments for time, and all hopes for eternity. (Cheers.) Yes, peace, and not discord, is our motto, and I can only conclude by expressing my firm persuasion and faith that that peace is not a mere slurring over and cancelling of difficulties and differences by compromises, but somewhat of the peace promised by Him who said,—“My peace I give unto you; my peace I leave with you; not as the world giveth give I unto you.” (Cheers.)

Mr. Alexander M'ARTHUR.—The toast I have the honour to propose is—“The Authors of the Papers read at the Victoria Institute.” (Cheers.) I am sure that this toast will be very heartily received and cordially approved by all present. When our indefatigable Honorary Secretary did me the honour of consulting me about the formation of this Institute, I said there could be no difficulty whatever in getting a sufficient number of members to support such an institute if a few of us would exert ourselves for that purpose; but, to my mind, the great difficulty appeared to be in consequence of the number of literary and scientific societies already in existence,—the difficulty of getting a sufficient number of able men to provide us with papers and take part in our discussions. I am glad to say that in both these respects we have succeeded far beyond our most sanguine expectations. With regard to the number of members we have succeeded well,—we are able to feel our way pretty well; but still I think that if our numbers were doubled our usefulness might be very largely increased. If, as I would suggest, every person now present would only engage to get one new member during the coming session, that would give a large increase to our numbers, and would help us very materially. I do not believe there is a gentleman present who could not manage to do this, and I believe there are many who could get five or ten more, and I would almost engage to get ten new members myself if any one else would promise to do the same. With regard to the papers, those who have been in the habit of attending our meetings and of hearing the papers read, as well as those who have read them in the Journal of the Institute, must be aware that many of them have been highly able and valuable. They have not, of course, been all equally able, but I must say that where there has been any falling off in this respect, where they have not come up to the mark, or where there has been any heterodoxy of a scientific or religious nature, there have always been gentlemen present to maintain the truth, and who have handled the papers very impartially—I was about to say very unmercifully. The discussions following the reading of such papers have always been of very great advantage to the members of the Institute. I am sure we are very much

indebted to those that have read the papers, and you will be glad to hear that this toast is to be responded to by one who occupies the very high position of being the Bampton Lecturer of this year, and by another who has contributed largely to the benefits of this Institution by the very valuable and important papers he has read. I beg to couple with the toast the names of the Rev. Dr. Irons and the Rev. J. H. Titcomb. (Cheers.)

The toast was drunk amid much enthusiasm.

Rev. Dr. IRONS.—I apprehend that on such an occasion as this it is not the intention of those present to edify one another on special topics. If it were, it would have been a cruel thing on the part of the Chairman to decree that we should each of us deal fully with our subject in ten minutes. But the fact is we meet here as friends to shake hands and wish one another success in the good work in which we are engaged. With respect to the subjects which I have been thanked for bringing before this Society, I can only assure you that the obligation was conferred by you on me, when you allowed me the pleasure of reading my papers. If they have been useful to any one, I am bound to thank God and take courage. I may again presume upon your kindness at no very distant date, if I have permission to address you again. (Cheers.) The cause which we meet here, I will not say to honour, but to own with the simplicity of our common faith, is not one which needs our “support”; and perhaps we are too often in the habit of speaking and acting as though our conduct towards that great cause were of such serious importance to others as it is to ourselves. We are prone to exaggerate ourselves and our position in the matter. For my own part I feel sure that, if I may paraphrase the poet,—

Religion's battle, once begun,
When handed on from sire to son,
Though baffled oft, is ever won.

I doubt not that the cause is advancing, whether personally we do our duty or not. As well might a man undertake to reverse the circulation of blood in the human veins as to stay the advance of the truth and purposes of God. If we look to the substantial grounds of our religion, they are absolutely unshakable, whatever man may say or pretend, and we may think with calmness both on the deist and the atheist his ally. We have no need to fear, then, for our cause; we are perfectly confident as to it; but there is something more for the Christian to rely on than the consciousness that truth advances—we rely on the promise of Christ, our Lord and Master, that His cause shall be triumphant; that He will be with His faithful people always. It is that that gives the Christian, even in times of trial and anxiety, a sense of security and peace, such as that of the child who in the midst of the storm is aware that his father is at the helm. He has no uncertainty in his mind; he is at peace, trusting in the Almighty power. We rely (as I may express it) on our cause; our cause does not rely upon us. It is no honour to that cause that we join in its vindication, as we feebly

call it; it is an honour to us to be permitted to do what God will allow us to do. It is our honour too that we are permitted to support weak brethren, whose faith, in these days, is miserably assailed by those who are more culpable than themselves. We are not at all afraid, we may add, of what some persons are continually crying out about—the real use of the human reason. I had a letter this morning from one of the most distinguished men in my own university; and, in describing the state of things at Oxford, he says, a great grief to him and to other thinkers like himself, is that the young and rising intellect of Oxford *will not think*; that an incapacity of reasoning seems growing up among them; that there is a want of intellectual power now in young Oxford, that is already telling in every way. I say then, let us assert the rights of reason; let us shrink from nothing that is true; let us be brave for the truth, for that alone will stand—that will abide when all the theories of man shall have perished.

Rev. J. H. TITCOMB.—I feel that I should be wanting in courtesy if I were not to say a few words. I look upon the object for which the Victoria Institute is founded as of the utmost importance. Of course, in ancient days, when there was no conflict between Science and Religion, such an institute was not required for the purpose of establishing science on the basis of religion. In the days of St. Augustine, who declared it heresy to believe in the antipodes, and of St. Hilary, who maintained that salt was the union of fire and water, of course any scientific man would see that there was little danger of any conflict between religion and science. Science was then in such a state of infancy that Religion had no fear of it. But at the present day it is very different. Since the days of Galileo science has made such progress, and has so much developed, that we must, as religious men and as guardians of what we believe to be the truth, look about us very sharply, very wisely, and very clearly, in order that we may hold our own against all antagonists. We have the truth on our side, and God will defend the right. (Cheers.)

Mr. W. M'ARTHUR.—I beg to propose the health of our respected chairman. (Cheers.) His high character requires no eulogy from me. I have had the pleasure of knowing him for many years, and I have always found him ready for every good work. Although I have the pleasure of sitting opposite him almost every night of the week; yet there is one peculiarity of the House of Commons, and that is, that we never allow political differences to interfere with private friendships. We are under great obligations to him for having come forward and filled the chair as he has done. (Cheers.) I have great pleasure in proposing his health.

The toast was cordially responded to.

The CHAIRMAN expressed his sincere thanks, and proposed the health of the Vice-Chairman, who held the important position of leader of one of the most devoted bodies of Christians in the country, the Wesleyans, who had done so much for the cause of truth in the last century, when the Church of England and dissenting bodies generally had not their present life.

The toast was warmly received.

Mr. W. M'ARTHUR, M.P., in returning thanks, expressed his belief that the Institute only required to be better known to be more highly appreciated.

The Rev. J. B. OWEN proposed "The health of the President, Vice-Presidents, Council, and Officers."

The toast was warmly received.

Rev. W. MITCHELL.—With regard to Lord Shaftesbury, there can be no doubt that he is most thoroughly with us, heart and soul, and that he will do all he can both for this Institute and for the defence of truth. It was a very old question put by Pilate to our Lord—"What is truth?" and I believe that this Society is a standing representative of the fact that English Christians are not afraid to ask, "What is truth?" and to stand by and in defence of what they believe to be the truth. What we want to know in this, as I believe I must term it, in spite of what people say, unscientific age, is what is truth? The gentleman who returned thanks for the army regretted that there was not a more scientific education given to the army, and I believe that the great defect of the present age is the want of scientific knowledge, for if there were more true scientific knowledge, such absurd scientific fancies and theories as we now hear would never be put forward. If men had a really scientific education, they would be better able to resolve that which is now mere hypothesis. I believe that every Christian may stand firmly on the ground of that which he is taught by his holy religion as being a lover and receiver of truth. I have sought to enter into scientific inquiry, whether successfully or not I do not know. Sometimes I feel as if the pursuit had carried me perhaps too far; but I can say this, that no pursuit of scientific truth has ever interfered with that which I have held, a childlike, simple belief in the truth of the revealed Scriptures. The more I inquire, the more does Science confirm the truth of Revelation. In fact, the teaching of revealed truth carries a man much farther than what is called mere scientific truth, and when he has acquired all that the intellect of man can teach, all that the most refined intellect, aided by the greatest powers, the highest mathematical knowledge, the most extraordinary industry in the pursuit of the experimental sciences, can lead him to, he has only begun to learn the very A B C of truth; and when he has attained this, and thus laid, as it were, the foundation, the holy Scriptures will lead him to still higher truth and philosophy,—that philosophy which depends on those Scriptural truths, of which only the Spirit of God can give the solution. (Cheers.)

Mr. J. REDDIE expressed his cordial thanks, and urged that the members should take the advice of Mr. Alexander M'Arthur, who had done so much for the Society, and introduce new members, in order that, being strengthened, the Society might accomplish the work before it.

Rev. Dr. RIGG.—I have been asked to propose the toast of "The Learned Societies and the Press." I am almost afraid to say a word about the learned societies after what we have heard, fearing you may have come to the conclusion, as this is so unscientific an age, that there are no learned societies

left in England. (Laughter.) I feel that if we in this Institute are to maintain our position we are bound to be on the very best of terms with all the learned societies of England. It is only by having a frank understanding with other societies that we shall be able to hold our own. I must confess that once or twice when I have had the privilege of attending the meetings of this Society nothing has struck me more than the indications I have noticed of the modest, careful, accurate deductive logic with which the Society has been in the habit of conducting its investigations, and deducing its conclusions. In the case of some other societies I cannot but think, that although they may be right while their thoughts are exercised within their own legitimate sphere, nevertheless, when they come to a sphere which is altogether apart—the sphere of cause, the sphere of theology, the sphere of true high philosophy—they are apt to judge too hastily, and to draw conclusions which cannot be sustained in regard to cause and effect, with reference to theology and eternal truth. Upon the whole, I do not believe that there is more mutual antagonism now between Christianity and Science than there has been in former ages. We should not forget that Roger Bacon was proscribed, and that even the science of the later Bacon was doubted; neither should we forget the history of Galileo, or of the wonderful discoveries of the philosophers of the last century, which were held to be conclusive against the authority of the Scriptures. We must not forget these things, and must be careful that we hold our own. It is true that men of science like Mr. Mitchell somehow never fail to reconcile science and religion. With regard to the press of England, I do not believe that it is more antagonistic to religion now than it was fifty or sixty years ago, nor even so antagonistic. (Hear, hear.) If any one will compare the publications of the beginning of this century with those of the present day, so far as regards their bearings on theology and religion, I am sure he will come to the conclusion that we have no need to fear the result of what is going on. (Hear, hear.) We have only to put our trust in God and fearlessly and calmly let in the truth whithersoever it may tend, and we may then believe in our learned societies, and thank God we have a free press. (Cheers.)

The toast was cordially received and responded to.

The CHAIRMAN then proposed "The Ladies," which toast was duly honoured. Mr. A. M'Arthur replied on their behalf, and the proceedings terminated.

ORDINARY MEETING, JUNE 5, 1871.*

CHARLES BROOK, ESQ., F.R.S., VICE-PRESIDENT, IN THE
CHAIR.

The Minutes of the last Meeting were read and confirmed, and the election of the following Members was announced :—

MEMBERS :—The Right Honourable the Earl of Dartmouth, 40, Grosvenor Square ; Alexander Haldane, Esq., 118, Westbourne Terrace ; Rev. Henry Winter Sheppard, M.A., the Rectory, Emsworth, Hampshire (Life Member).

ASSOCIATES 2ND CLASS :—Rev. William Bowe, St. John's, Weardale, Darlington ; Charles Burls, Esq., Peckham Rye Common ; Rev. William Henry Hoare, M.A., Oakfield, Crawley, Sussex ; Mrs. William Josiah Irons, Wadingham Rectory, Kirton Lindsey ; Rev. R. Lloyd, M.A., Calverley Terrace, Tunbridge Wells.

Also the presentation of the following works :—

Journal of the Royal Institution of Great Britain. Part III., Vol. VI.
From the Institution.

The Builders of Babel. By Dominick M'Causland, Q.C. From the Author.

The Rev. CHARLES GRAHAM, in the absence of the Author, read the following paper, and in doing so, omitted sections 31, 32, and 33, at the request of the Council, which considered them as trenching upon purely theological and controversial points.

* The proceedings at this meeting are inserted here, as the papers read thereat complete, as far as is at present possible, the important inquiry begun by the Rev. R. Thornton, D.D., in his paper "On the Numerical System of the Old Testament" (see p. 105). The interest of the present volume is much enhanced by this slight departure from the ordinary course.

The paper "On Civilization Moral and Material," by the late J. Reddie, Esq., will be found in Part 21, commencing Vol. VI.

*THE HIGH NUMBERS OF THE PENTATEUCH: ARE
THEY TRUSTWORTHY?* By PHILIP HENRY GOSSE,
F.R.S., VICE-PRESIDENT *Vict. Inst.*

1. **M**ORE than a year ago, a paper on this subject, by the Rev. Dr. Thornton, was read before the Victoria Institute. If any apology were needed for going again over the trodden ground, it might be found in the grave importance of the subject, at least in its collateral issues, and in my own disagreement, *in toto*, with his conclusions. I say "my own disagreement," because I have no desire to share my responsibility with others; though I have reason to think that I do not stand alone in my judgment.

2. The subject is far from new. It is an old battle-field both of assault and defence. Of late it has been fought-over with fresh energy on the Continent, and in England. The author of the paper I have mentioned, apologises for a path, to some extent, at least, parallel with that pursued by Dr. Colenso; and it is but fair to add that he strongly disavows his conclusions. Dr. Thornton, whom I would not for an instant confound with the school which is represented by Dr. Colenso,—considers that he is "writing in the interests of that Scripture which he criticises." But of this others also may judge. I take the freedom (without at all impugning his intention) of judging whether his paper is in the interests of Holy Scripture, or adverse to it; and my judgment is very different from his. I believe that the reasonings of that paper, *if they are severely logical*, must inevitably lead to the rejection of inspiration, in the only sense in which inspiration is to me worth anything. This result its respected author would, I am sure, repudiate as vehemently as myself.

3. Therefore, while I would not write a word disrespectful, either to him or to any one else from whom I differ in judg-

ment, I may, without offence, I trust, examine his published opinions, and test his reasoning. This I propose to do in the following memoir; not without hope of establishing, on impregnable bases, conclusions of a very different character; and of satisfying the humble believer that the assailed High Numbers of the Old Testament, so far from being "weak points," which we must give up with a good grace, "lest we subject ourselves morally and intellectually to the same penalty and the same disgrace as military law assigns to those who obstinately defend a post plainly untenable," stand on the same broad footing as the narrative itself, and possess the very same claim to our acceptance.

4. Let me at the outset distinctly say that my faith rests not on a translation, nor on a copy. We may most legitimately discuss whether *σπεῖωμα* in Greek, or *firmament* in English, adequately represents רָקִיעַ; and whether certain words or phrases have been omitted, added, or changed, by the infirmity of transcribers. It is upon the original autographs of the inspired writers that our faith rests with absolute confidence. Yet, as He who ordained the written Word was possessed of perfect wisdom, absolute knowledge, boundless resources, and could not but foresee that, to the overwhelming majority of human readers, this Word would be known only in copies or translations, it is derogatory to Him to suppose that He would not provide for the potential, if not actual, rectification of errors of frailty. A wise mechanician does as much as this. He who invents and constructs an electric cable forecasts the perils to which it will be exposed; guards the metals from contact with the oxidizing water; and, as far as possible, the cord from the violence of anchors and grapnels. And surely the Allwise will do, nay, hath done, no less. *Lectiones variae* are checked by the collation of many copies, by the renderings of ancient versions, and by the citations of early writers; *translations* are checked by the wide diffusion of learning enabling many to test their correctness. In a very few cases, one inspired writer appears to be at variance with another;—as when the interval between the Exode and the Foundation of the Temple is given as 480 years in 1 Kings vi. 1, and as a century more by the Apostle Paul (Acts xiii. 18—22). In such cases, it is doubtless lawful and worthy to examine on which side the evidence preponderates, and to suggest explanations of the variance. Only (and this I say to myself, as well as to others), in all such disquisitions let us bear vividly in mind that it is the Truth of God with which we have to do. It is holy ground: we must tread with unshod feet. In no spirit of rivalry, no pharisaic assumption of superiority over

others, do I attempt this inquiry ; but in a sincere desire that God's glory may be vindicated, and the faith of my fellow-believers sustained.

5. There appears in many even reverent minds, a somewhat morbid fear of admitting God's government, even when the legitimacy of miracle is, in terms, allowed. We are constantly meeting such a statement as this :—"Such and such could not have been without a miracle ; but we must not bring in miraculous intervention needlessly." Granted most fully : but is there no *via media* ; nothing between the ordinary experience of occidental Gentile life in the nineteenth century and a suspension of the "laws of nature" ? I conceive that there is ; and that the recognition of it will go far to silence all the objections which the De Wette school of theology brings against Holy Scripture. That Book presents relations sustained by the Blessed God to His creation, far other than the imposition of an unalterable law upon it at the first ; very different from a mechanic's making a clock, and leaving it to go. Unceasing supervision and control are His. The Eternal Son is described as "upholding all things by the word of His power" (Heb. i. 3) : "in Him all things hold together,"—*συνέστηκε* (Col. i. 16). Nay, so minutely vigilant is this supervision, that, as the Lord Jesus Himself avers, a sparrow falls not unnoticed by God ; and that the very hairs of our heads are all numbered (Luke xii. 6, 7). We are then abundantly justified in concluding that the Blessed God not only suspends His own laws of created being when He pleases, but does also so hold them in His hand that their operation is directed and moulded to His ends. How what we call the laws of nature will act when there is no Divine reason for modifying their *average* action, is one thing : how, when God has a special object to accomplish with them, is another. And of this varying *modus* He alone is the judge ; we, only after the fact, by reverently watching His dealing, by hearkening to the voice of His word.

6. One thing it is not difficult to see :—that the national birth of Israel, and the isolation of them from all other peoples, was a cardinal part of the Divine economy ; since of them Christ came, who is over all, God blessed for ever. Here, then, we have a *dignus Vindice nodus*.

7. This seems to me to lie at the base of almost all the difficulties *de quibus agitur* ; the reluctance to admit that One of infinite resources, having a will of His own, is not to be limited in action by ordinary average conditions. For, recognize this ; fully, constantly, consistently admit this, that "He doeth according to His will [not only] in the army of

heaven, [but also] among the inhabitants of the earth" (Dan. iv. 35); and the difficulty has vanished: the question becomes solely one of testimony.

8. Let me illustrate this. Suppose an intelligent and cultivated Siamese, who has previously had no intercourse with Europeans, suddenly, on some account or other, sent on a mission to England. He returns, and writes a report of his adventures. Perhaps he had seen one of the princely domains of our noblemen, and had been greatly struck with the gorgeous orchid-houses, many denizens of which were familiar to him from childhood. On this his narrative dilates; he mentions one by one the magnificent oriental flowers by their Siamese names; avers that he saw these in the distant northern land; that multitudes of others, novel to him, but of like forms and habits, were associated with these; that several hundreds were visible at one glance; that all were growing healthfully; that no other plants but these aërial parasites were present; no trees, no shrubs, no trailing briers, no thorny creepers, no tangling lianes, no grass, no weeds, no rubbish of any sort. He omits to state the conditions under which these facts occurred; the search for the plants in their native regions, their collection by many hands, and their transmission to England; the glass houses; the artificial heat; the selection and accumulation of one special order; the exclusion of everything alien to it; the learning, skill, and care bestowed upon the object;—all this he does not mention; perhaps he had little notion of it himself; he simply and straightforwardly narrates the facts.

9. Presently the critics in the Siam capital dissect his narrative. "With this tribe of plants we happen to be familiar; and here we shall have a vantage-ground for estimating the truth of his other statements. Now, he has already said, and we well enough know, that England is a cold country, with severe frosts every year; but these air-plants are found only in a hot climate; frost, or the approach to it, would certainly kill them. Here is contradiction the first! But, again, he saw hundreds at one glance. Now, we all know that, though they are common enough with us, to see half a dozen kinds together is very rare; we should have to take a weary walk, indeed, before we had observed a hundred of these beautiful parasites. Then again, whoever heard of such plants growing, as this romancer pretends, by themselves alone: all the vegetation composed, forsooth, of air-flowers! This fact alone stamps impossibility on the whole. Again, they are almost wholly—many that he actually names are invariably, epiphytes, parasites on the trunks and limbs of our forest trees; and mark! he

distinctly states that 'no trees' were within sight. It is, in short, abundantly clear, that whatever object the *soi-disant* traveller may have prescribed to himself in composing this narrative, it is totally destitute of all claim to historic verity.

10. "But he has incidentally mentioned a trifling circumstance, in which again we are fortunately able to test his veracity; and here, too, we find it fails beyond all possibility of doubt. He contracted a friendship in England with a young student of noble birth, who, in fact, introduced him to this imaginary paradise of flowers. He declares that on the 1st of April, 1871, he was delighted to learn that his friend had attained great honours throughout England, by rowing in the successful one of two boats, that were striving on an English river for mastery. We will not dwell on the absurdity of a noble's toiling in rowing-boats, nor on the equal absurdity of a mighty nation like England's caring which boat won. We will probe him closer than this. He has happily committed himself to dates. Now we pin him. It was on the 1st of April, 1871, that this strife of boats occurred, and on this 1st of April, 1871, he declares that the news of the result delighted him. Where, then, was he on that day? Near the river, of course, you say. Not at all: he has actually recorded that at noon of that very 1st of April, 1871, he sailed from Bombay, a place several thousand miles from England! Thus he asks us to believe that information of the issue of a race of boats on an English river, necessarily occupying in all its concomitants several hours, was certainly known at several thousand miles' distance before the noon of the same day:—we need not say a physical impossibility! The day, however, selected for this feat, which sets both time and space at nought, is the 1st of April, a day for ages devoted by Western superstition to mockery and unreality; a circumstance which of itself ought to suggest the non-historic character of this document."

11. Exactly as my supposed Siamese critic deals with what, nevertheless, are irrefragable verities, does the Colensian school deal with the Pentateuch; and the sting and virus of both are annulled by the same principle. It may be replied to both,—“You assume that what is *ordinarily* true must be *ever* true; you make no allowance for intelligence, and will, and power, controlling the ordinary, and inducing the extraordinary.” The taste of the Western noble chooses certain forms of plant-beauty; his wealth enables him to put in motion the maritime resources of his nation to gather the objects of his pleasure; mechanical skill to make an artificial climate for them; horticultural skill to grow them; while occidental science is perpetually discovering laws of nature,

whereby things accepted as impossible become matters of daily experience.

12. So with the Most High God: it is one of His titles that He is "Possessor of heaven and earth." All the laws of moral and material being are in His hand: He needs not be ever suspending; He wields, uses, controls them. Birth, marriage, life, death, health, longevity, puberty, fruitfulness, climate, weather, daylight, darkness, sunshine, cloud, military skill, order, discipline, power of command, of legislation, of administration, the very will of man, his pride or his docility; these, and a thousand more, are but the obedient and ready tools with which God effects His purposes. In what I have to say in reply to certain charges of untruth brought against the Pentateuch, I shall ever assume and fall back upon this principle as an impregnable truth, however convenient it may be to ignore it.

13. I grant to the full, and support with both my hands, the need of uprightness in such inquiries, that Dr. Colenso so strenuously contends for. Will a man lie for God? Yet, having accepted, *on other grounds*, the fact of revelation, and that the Pentateuch is an integral part of the divinely-inspired Word, I come *assuming* that, being of God, it is true; I will yield one iota of it only when absolutely compelled to do so. I require the objector to give absolute proof of the *non*. It will not do to say, as is so constantly said, "I do not see how." Perhaps you do not; perhaps *we* do not; but is this proof of the *non*? We stand on testimony: at least you must *drive* us out; we are not going to retire at the mere gleam of weapons.

14. Dr. Colenso (§ 10) observes, "My reason for no longer receiving the Pentateuch as historically true, is *not that I find insuperable difficulties* with regard to the miracles or supernatural revelations of Almighty God, recorded in it, but solely that I cannot, as a true man, consent any longer to shut my eyes to the absolute, palpable, self-contradictions of the narrative." This, at least, narrows our field of combat. "*Absolute, palpable, self-contradictions*," he says. Well, let these be arrayed; but let us be quite clear as to what makes a contradiction. My ignorance in what manner such and such a result was obtained as is testified, is surely no contradiction. The Siamese might be ignorant—"might not see how"—the intelligence of a fact could be conveyed from England to India, within five minutes: was this therefore an absolute, palpable, self-contradiction? How many of Dr. Colenso's "contradictions" might in a moment be dissipated by more knowledge, as by Ithuriel's spear!

15. Against the principle avowed by Dr. Thornton, in his § 27, I cannot too strongly protest; that "the numbers

recorded in our Scriptures stand on a very different footing from the facts; and while [he] clings most stoutly to the facts as recorded, [he] gives up the numbers." I protest against this eclectic process. The numbers are an integral part of the narrative, are thoroughly interwoven with the facts in it, and cannot be separated. Whatever of error the numbers are liable to, through human infirmity, to the same are the facts liable; for the statement that the numbers were expressed in the original MS. by alphabetic or other signs, modified by points, is not proved, and is not relevant. Do ancient MSS. exist in which the numbers are so expressed? But even if it be so, though isolated numbers which present difficulties (as 700 and 7,000, in 2 Sam. viii. 4, and 1 Chr. xviii. 4), may be thus accounted for, cases in which the number occurs again and again many times, with great amplitude of detail, and with many concomitant confirmations (such as the 600,000 of Israel), derive no light from this peculiarity. In our present Hebrew text the numbers are expressed in words at length, and there is nothing that I know of to throw *them* out of the category of words in which the *facts* are recorded.

16. I propose, mainly, to examine that number against which in all ages lances have been shivered. It is the *cheval de bataille* of the impugnors of the Sacred Text. Dr. Colenso has mainly occupied his first volume with it. Dr. Thornton gives it a prominent place in his animadversions. I refer to the number of the people of Israel that left Egypt, "six hundred thousand men, besides children." It is said to be impossible that this number should be in itself true; impossible that it should be true as the increase of the households that went down into Egypt. These are distinct questions.

17. Dr. Thornton expressly admits the possibility of the number (§ 12), at least in the latter aspect, but he pointedly asks, "Is it probable?" He concludes that the true number was but 600 armed warriors. The gentlemen who led in the discussion sequent on the paper, allowed this number (for the most part, though with some diversity of judgment), to go by default.

18. That the people delivered by Jehovah were an immense host is seen on the surface of the whole history. I will enumerate some examples in point. In many passages they are spoken of under the term hosts, or armies (צבא). "Bring out the children of Israel. . . . according to their *armies*" (Exod. vi. 26). "That I may bring forth mine *armies*, my people, the children of Israel, out of the land of Egypt, by great judgments" (vii. 4). "In this selfsame day have I brought your *armies* out of the land of Egypt." "All the

hosts of the Lord went out." . . . "The Lord did bring the children of Israel out of the land of Egypt *by their armies*" (xii. 17, 41, 51). In the wilderness of Sinai they were numbered in detail "*by their armies*" (Numb. i. ii. x., *passim*); &c. &c. It is in perfect consonance with this, that, on their entrance into the desert, they were able to win a pitched battle against the martial nation of Amalek (Ex. xvii.); and, just on their emergence from it, conquered, at the sword's point, the forces of Heshbon, and of Bashan, and of Midian, winning from the last-named much spoil, and from the first two a vast territory, full of walled cities and unwall'd towns and villages (Num. xxi. xxxi.). There were threescore cities, "all of them fenced with high walls, gates, and bars," in Bashan alone (Deut. iii. 4, 5). The whole of this immense region was at once possessed and inhabited by two and a half out of the twelve tribes. Now, if we adopt Dr. Thornton's emendation, that the whole twelve could furnish but 600 armed men, we shall have the ludicrous result of an army of 600 men conquering these warlike nations, capturing their strong fortresses, and then occupying their great, fertile, and hitherto populous territories, by a sorry colony of one hundred and ten warriors!

19. The Sacred Story repeatedly calls the people of Israel by the dignified term "*nation*." Jehovah says, "Ye shall be unto me an holy nation" (Exod. xix. 6). Moses, appealing to their gratitude, asks, "Hath God assayed to go and take Him *a nation* from the midst of *another nation*. . . . according to all that the Lord your God did for you in Egypt?" (Deut. iv. 34). And, just before, he had pictured the surrounding peoples, saying, in admiration of the wise statutes possessed by Israel, "Surely *this great nation* is a wise and understanding people!" (Deut. iv. 6—8).

20. But let us listen to what other (and not friendly) nations really did say. More than eighty years before the Exode (for it was before Moses was born) we find the increase of Israel moving the jealousy and the fear of the powerful king of Egypt. He calls his people to his counsels, and thus he unburdens him of his misgivings. "Behold, the people of the children of Israel are *more and mightier than we*: come on, let us deal wisely with them, lest they multiply, and it come to pass that, when there falleth out any war, they join also unto our enemies, and fight against us, and so get them up out of the land" (Exod. i. 9, 10). Let us weigh well these words. Granted that they express the exaggeration of terror; yet, can they conceivably consist with the hypothesis that,

after nearly a century of multiplication (see verses 12, 20) yet to run, the people could muster but six hundred men-at-arms? Fancy a Pharaoh of martial Egypt quaking in mortal terror when he portrays what may happen from his having six hundred—no, the *progenitors* of six hundred—male aliens in his empire!

21. Pharaoh, however, stands not alone in his fear. At the close of the wilderness wandering, another king, Balak of Moab, sees the intrusion of the strange tribes into his smiling plains, and is “distressed because of the children of Israel.” He craves the supernatural aid of a remote prophet, saying, “Behold, there is a people come out from Egypt: behold, they cover the face of the earth [six hundred men with their households]; come now, therefore, I pray thee, curse me this people, for they are *too mighty* for me [only six hundred warriors, remember!]; peradventure I shall prevail, that we may smite them, and that I may drive them out of the land.” Surely this critical hypothesis of arithmetical expurgation deals somewhat cavalierly with the prowess of ancient monarchs, if the sight of six hundred warriors (without weapons, too, according to Dr. Colenso) could cause their courage thus to ooze out at their fingers’ ends! On the other hand, all is in thorough consistency with the inspired statements of the population of Israel.

22. Again, these statements themselves, neither few nor uniform, sustain the most perfect harmony *inter se*. Thus we find reiterated allusions to “the thousands” of Israel. When Jethro visited his illustrious son-in-law at the Mount of God (Ex. xviii.), he saw with regret that he was “wearing himself away” with judging the controversies of the people (pause a moment, and weigh the probability of the litigation of six hundred householders wearing the judge away!), and counselled a transfer of subordinate spheres of the labour, by “placing over the people able men . . . to be rulers of *thousands*, and rulers of *hundreds*,” &c. And this advice Moses followed (vv. 21, 25; Deut. i. 15). Thenceforth such a subdivision is frequently recognized. The princes of the tribes, who at the first census were appointed to stand with Moses, are expressly designated (Numb. i. 16) “heads of thousands in Israel.” When the different modes of sounding the silver trumpets were described, and the significance of each was defined, it was ordained (Numb. x. 4) that “if they blow but with one trumpet, then the princes, *which are heads of the thousands* of Israel, should gather themselves.” So, to adduce no more, for the avenging expedition against Midian

“there were delivered out of *the thousands* of Israel, a thousand of every tribe, *twelve thousand* armed for war” (Numb. xxxi. 4, 5; see also vv. 48, 52, 54).

23. Far more emphatic than any of these is that invocative formula which Moses was wont to utter when the Ark rested (Numb. x. 36):—“Return, O Jehovah, unto the many thousands (lit. *the millions*,—רַבְּבוֹת אֲלָפִי) of Israel!”—a phrase which, I think, has not been noticed in this controversy; yet one surely of great weight.

24. And, finally, there are numerous occurrences of high numbers, as characterizing Israel, expressed, not only in rounded phrase—“*totus, teres, atque rotundus*”—but in minute business-like exactness. For, not to speak of the judgments inflicted by the Divine sword on great masses of the people at once, as the 14,950 who perished in Korah’s conspiracy (Numb. xvi. 49), and the 24,000 on the defection of Baal-peor (xxv. 9), this latter confirmed by an inspired Apostle (1 Cor. x. 8), who reckons it as 23,000 (the exact sum lying probably between the two round numbers),—not to press these, though these alone are quite sufficient to overthrow Dr. Thornton’s hypothetic estimate, there are no fewer than four enumerations, all quite distinct and disconnected, of the sum total of the able males of Israel. In two of these, the round number alone is given. In the narrative of the Exode itself, it is recorded (Ex. xii. 37),—“The children of Israel journeyed about 600,000 on foot that were men, besides children.” And, on the promise of flesh at Taberah, Moses, himself quailing before the vastness of the gift, remonstrated with the Almighty Jehovah thus:—“The people among whom I am, are 600,000 footmen. . . . Shall the flocks and the herds be slain for them, to suffice them? or shall *all the fish of the sea* be gathered together for them, to suffice them?” (xi. 21, 22), where not merely the arithmetical expression must be looked at, for this might possibly have been mis-copied, but the wonderment of the language must also be weighed, as expressing the vast equivalent of that number in Moses’s estimation—“the flocks and the herds,” “all the fish of the sea!”

25. But in other cases the round total is exchanged for the careful exactitude of an actual census. Twice were the people accurately counted by Jehovah’s express command: first, in the early part of the desert sojourn, when the total sum of the able warriors was (Numb. i. 46) 603,550; and again just at its close, when it amounted (xxvi. 51) to 601,730.

26. Moreover, in both of these two cases last named, not only is the totality set down with much precision, but a great

number of subordinate sums—sub-totals—are given, the aggregate of which makes up the full amount. The numbers stand thus :—

					First Census.	Second Census.
Reuben	...	...	...	...	46,500	43,730
Simeon	...	...	...	...	59,300	22,200
Gad	...	...	...	...	45,650	40,500
Judah	...	...	...	...	74,600	76,500
Issachar	...	...	...	...	54,400	64,300
Zebulun	...	...	...	...	57,400	60,500
Ephraim	...	...	...	...	40,500	32,500
Manasseh	...	...	...	...	32,200	52,700
Benjamin	...	...	...	...	35,400	45,600
Dan	...	...	...	...	62,700	64,400
Asher	...	...	...	...	41,500	53,400
Naphtali	...	...	...	...	53,400	45,400
					<hr/>	<hr/>
					603,550	601,730
Levi	...	...	...	...	22,000	23,000

27. The enumeration, in general, appears not to have proceeded lower than *hundreds*, save in one example in each census, in which it went as low as *tens*. In Levi's case *thousands* seem to have constituted the limit of inquest; but, as this tribe stood in a distinct category, and was forbidden to be numbered with the rest (Numb. i. 49), we may perhaps understand the direction in iii. 15, as implying an estimate, rather than a precise enumeration. Yet the comparison of the 22,000 Levites with the 22,273 first-borns (iii. 43), and the special provision for the odd 273, might suggest that the one of these numbers was as minutely accurate as the other; in which, of course, there is no impossibility.

28. This is unimportant. But I must press the correct additions of the constituent figures in the two censuses, and the deliveries of the exact totals, as absolutely proving, utterly beyond possibility of sane question,—that *these great numbers have not suffered from carelessness* of honest transcription. The whole elaborate theory of Dr. Thornton, often, however, put forth before, that numbers having been expressed, in ancient MSS., by alphabetic characters, modified by superadded dashes or dots, the consimilarity of certain of those characters became “the most fertile source of errors in the text of Scripture as regards numbers;”—a matter that was so much discussed afterwards, and so generally conceded;—may be admitted as theory,

and yet its relevancy to the present cardinal case must be wholly denied. The number of 600,000 certainly owes nothing to this cause. That all these constituent figures should have been miscopied by careless scribes, quite unintentionally, and yet that the totals,—addition-sums of five columns of twelve lines each,—should be delivered correct, could have resulted only from a special overruling Providence working expressly on behalf of falsehood!

29. No, there is but one alternative possible. Either the numbers are truly given, and 600,000 is the thoroughly trustworthy sum of the men who left Egypt, or else the numbers have been systematically falsified, and this with elaborate care that there be no self-contained source of detection; falsified therefore wilfully and wickedly.

30. Thus we are brought face to face with those who, like Dr. Colenso (vol. i., pref. xvii.), deny the historical character of the Pentateuch. They see that no transcribers' errors will account for the amplitude of these figures; the narrative must stand or fall with them; if they cannot be received in their integrity, the Pentateuch is but a romance, a fiction, a comparatively modern "story," compiled out of "ancient legends."

31. All our hopes for eternity are inseparably linked with this book. If it is not absolute truth,—there was no Fall of Man; no arch Adversary; no promise of a Deliverer to bruise his head; no separation of Abraham; no covenant of blessing; no chosen seed; no divinely-appointed redemption by blood; no pictured reconciliation to God; no access into the Holiest. All these were worthless fables; unhistoric legends. If it is not absolute truth, then Jesus was indeed "a deceiver of the people;" or a brainless enthusiast; He was not God manifest in the flesh; He did not "speak the words of God;" the word which the people heard from Him was not "the Father's which had sent him;" His death was valueless as an atonement; He is not raised from the dead; and WE ARE YET IN OUR SINS; and they that have fallen asleep in Christ ARE PERISHED. Yes, this is what we have to face; every one of these results must follow if the Pentateuch is not the revelation of the unlying God,—ὁ ἀψευδὴς Θεός.

32. It is often asserted that some parts of the written Word stand on a different ground from others, in regard to their claims to our obedience of faith. In the discussion which followed Dr. Thornton's paper, Mr. Titcomb is recorded to have said,—“For if I see that in such matters, which are utterly indifferent to the purposes of eternal life, there are a variety of statements, one more full and another less full; one

appearing a little exaggerated, and another appearing incomplete; I fall back on the recollection that these things have nothing to do with the grand moral and spiritual truths of Revelation."

33. This sentiment reappears in so many forms, and on so many occasions; it is so often repeated, that the Bible is not intended to teach us science, but religion; it is so constantly insinuated that there are many things touched in it which are non-essential to its scope, and which, therefore, may be erroneously described, without derogating from it as a rule of faith and practice,—that it is worth while to examine it. I widely differ from the opinion. I believe it to be a great mistake. I judge it to have its root in a total misapprehension of the real object and scope of the written Word. Those who accept the Holy Scriptures as a rule of life and nothing more, intended to enlighten man how to live a righteous life; nay, those who see no more in them than a revelation how sinners may be saved from condemnation by the sacrifice of Christ, and delivered from the wrath to come;—fail to grasp the scope of the Word as really,—not as egregiously, not as fatally,—as those who see in it only a true history of venerable antiquity. The object of the inspired writings, uninterruptedly kept in view throughout the ages, as the successive portions were communicated by the Eternal Spirit to the prophets, may be, I think, described as the "Mystery of God's will, according to the good pleasure which He hath purposed in Himself: that, in the dispensation of the fulness of times, He would gather into a Head (*ἀνακεφαλαιώσασθαι*) all things in Christ, both which are in heaven, and which are on earth" (Eph. i. 9, 10). In other words, the reconciling of all things to Himself by the death of Christ, and the subjecting of all to Manhood in resurrection, in His person, to the glory of God the Father. (See also Ps. viii.; Heb. ii.; 1 Cor. xv.; Phil. ii.; Col. i.; Rev. v., &c.) This is a vast theme, on which the Holy Ghost has vouchsafed to discourse with man. The salvation of sinners, and their sanctification, forms indeed one chapter—a very important part, but still only a part—of the great Epos, which begins before man was made, and which runs on till the Church sits on the throne of glory with the glorified Christ, members of His body, [made] of His flesh and of His bones, and thence into eternity to come. Everything, therefore, may find place in the Scriptures of God. I dare not say, of anything, This is irrelevant or non-essential; natural history, geology, cosmogony, chronology, Gentile history, ethics,—whatever it is, its place in the record depends on its connection with the grand purpose, more recondite or

more obvious; and of this He alone is the competent judge, who unfolds the purpose. Of this, however, we may be confident; nothing that He sees fit to interweave into His Revelation will be other than absolutely true, absolutely worthy of our subjection of mind, whether it appear to our clouded vision trivial or momentous.

34. Having shown, as I trust I have, that the number assigned to Israel at the Exode is no *lectio varia*, no *lapsus calami* of a careless scribe, but an integral part of the text as it came from the writer, I proceed to test the demand that it be rejected, because of the "palpable self-contradictions" which cleave to it. This is, as Dr. Thornton remarks (§ 12), "the very basis of the operations of Dr. Colenso and his followers against the authenticity of the Old Testament."

35. It is argued that such a population, on the given conditions of origin and time, was, if not absolutely impossible without a miracle, at least so excessively improbable as to be unworthy of belief. How could the households which went down with Jacob have increased to 600,000 adult males during the sojourn in Egypt? Now, at the outset, what is probability? Is it not the assumption that the like results will follow certain conditions, as have invariably followed them hitherto within human experience, *cæteris paribus*? The application of this law to the case before us breaks down at once, as soon as we admit that the sacred narrative everywhere asserts, that God Himself had a special object in view; for what parity is there between human experience and the energy of the Most High God? (See *supra*, § 12.)

36. I admit that the period of the increase was 215, and not 430 years; the authority of Paul (Gal. iii. 17) being conclusive that the Giving of the Law was 430 years after the Covenant of Promise made to Abraham (Gen. xii. 3, 7). It is certain from the narrative that at the bisection of this term Jacob went down to Egypt. For, from the Covenant

To the birth of Isaac	25 years.	Gen. xii. 4; xxi. 5.
To the birth of Jacob	60 "	" xxv. 26.
To the interview with Pharaoh	...	130	"	" xlvii. 9.

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37. That the multiplication of the chosen seed should be a matter of Divine care, was guaranteed by express covenant, often reiterated. "I will make of thee a great nation," was the promise of Jehovah to Abram when He called him to forsake his father's house (Gen. xii. 2). "I will make thy seed as the dust of the earth" (xiii. 16). "Tell the stars, if

thou be able to number them : so shall thy seed be " (xv. 5). "I will make thee exceeding fruitful, and I will make nations of thee" (xvii. 6). "Abraham shall surely become a great and mighty nation" (xviii. 18). "In multiplying I will multiply thy seed as the stars of the heaven; and as the sand which is upon the sea-shore" (xxii. 17). So, in turn, to Isaac:—"I will make thy seed to multiply as the stars of heaven" (xxvi. 4). And again to Jacob:—"God Almighty bless thee, and make thee fruitful, and multiply thee" (xxviii. 3). "Thy seed shall be as the dust of the earth" (xxviii. 14). "I am God Almighty : be fruitful and multiply ; a nation and a company of nations shall be of thee" (xxxv. 11). It may be objected that these promises of multiplication looked forth into the far-distant future, to be fulfilled in the mystic SEED. While I admit the mystic application, I note that *in most of these promises* this item is immediately followed by the assurance that the seed so multiplied shall possess the very lands of the Patriarchs' sojourn; which appears to limit the *primary* fulfilment, at least, to the Eisode into Canaan: while, in xlv. 3, Jehovah expressly covenants to Jacob, that Egypt itself shall be the scene of the vast increase. "Fear not to go down into Egypt; for I will THERE make of thee *a great nation*."

38. Antagonists charge the stated increase of Israel with high improbability. Nay, there is the highest *probability* in its favour. If there were no other passage collaterally bearing on the point than the promise last quoted, it would alone be conclusive for the probability. For what are the conditions? These:—the Omnipotent God, unimpeachable in truth, who possesses and wields all the resources of being, all the powers of nature and spirit, pledges His word that Jacob shall become not only a nation, but *a great nation, in Egypt*; and that He Himself will make him this. Could the result be otherwise than it is narrated to have been?

39. And the infinite resources are presently put into operation. The Patriarch, already, in two generations (which there is no reason to suppose complete, as his sons were still in the prime of life), has become seventy souls; and they all migrate to Egypt. The next thing we read of them is as follows:—"And the children of Israel were fruitful, and increased abundantly, and multiplied, and waxed exceeding mighty, and the land was filled with them" (Exod. i. 7.) (Let us not fail to note the emphasis that attaches to these phrases, in the very variety and cumulation of them). Their abnormal increase (swarming, "like the fry of fishes," רנה, as Jacob had predicted of the progeny of Joseph, Gen. xlviii. 16) excited the

fear of the jealous king, as we have already seen, and evoked the most energetic efforts for repression. With what result? The inspired historian is most explicit:—"But the more they afflicted them, *the more they multiplied and grew*" (Exod. i. 12). Still the conflict went on, man against God; dread of the rapidly swarming alien population caused new measures of cruel repressive policy; but with the same result, "the people multiplied, and waxed very mighty" (i. 20).

40. By-and-by, after the deliverance has been effected, we find distinct and repeated recognition of the vastness of the population, not merely as an absolute fact (of which many examples have been adduced), but in relation to its increase from small beginnings; which increase is always presented as a wonderful manifestation of Divine power. Thus Moses, when, recounting the history, he alludes to his having, at an early period in the sojourn, painfully felt the burden of so great a people, pauses a moment to make this reflection (Deut. i. 10);—"Jehovah your God hath multiplied you, and behold, ye are this day as the stars of heaven for multitude." In the same discourse he presently reminds them of the smallness of their origin (vii. 7),—"Ye were the fewest of all peoples;" and again, with a definiteness which strongly brings into prominence the marvellous augmentation;—"Thy fathers went down into Egypt with threescore and ten persons, and now, Jehovah thy God hath made thee as the stars of heaven for multitude" (x. 22). And yet once more, the growth of one man into *a nation*, and this *in Egypt*, was ordained for solemn and set remembrance, when the land of inheritance should be possessed. Let us examine the terms of this ordinance (Deut. xxvi. 1—11):—"And it shall be, when thou art come in unto the land which Jehovah thy God giveth thee for an inheritance, and possessest it, and dwellest therein, that thou shalt take of the first of all the fruit of the earth, which thou shalt bring of thy land that Jehovah thy God giveth thee, and shalt put it in a basket, and shalt go unto the place which Jehovah thy God shall choose to place his name there. And thou shalt go unto the priest that shall be in those days, and say unto him, 'I profess this day unto Jehovah thy God, that I am come unto the country which Jehovah sware unto our fathers for to give us.' And the priest shall take the basket out of thine hand, and set it down before the altar of Jehovah thy God. And thou shalt speak and say before Jehovah thy God, 'A Syrian ready to perish was my father; and he went down into Egypt, and sojourned there with a few, and *became there a nation, great, mighty, and populous.*'"

41. Thus, I venture to assert, it has been shown, upon abundant and impregnable evidence, that the facts that the children of Israel amounted to hundreds of thousands at the time of the Exodus; that these were the increase of Jacob's household; and that the increase mainly occurred while they were in Egypt; are no excrescences casually affixed to the Sacred History, but integral and inseparable parts thereof, and must of necessity stand or fall with it. If the number is false, it is wilfully, consciously, false; and the whole narrative is false,—“unhistoric,” to use Dr. Colenso's euphemism; because in every page it either asserts or assumes this numerical condition.

42. If, then, the increase which the historian uniformly presents was in the highest degree probable, on the data which he also furnishes, viz. the covenant engagement of One who could not lie and could not fail,—the whole ground is cut from beneath our opponents' feet; and it seems almost an idle work of supererogation to show that the actual increase of the race within the given period was, after all, nothing so far exceeding ordinary providential supervision as to call for incredulousness, or even for wonder. The true wonder is that the Blessed God should condescend to take such interest in man.

43. Professor Rawlinson (“Aids to Faith,” 280) cites the recorded fact that Jacob brought into Egypt fifty-one grandsons; and observes that “if, under the special blessing of God so repeatedly promised to Abraham, his male descendants had continued to increase at the same rate, they would long within the specified period have reached the required number.” In a note, he adds:—“The *average* increase of the males in the two generations had been *more than* sevenfold each generation. A sevenfold increase would have given 857,157 males in the fifth generation, and 6,000,099 in the sixth.”

44. It will, perhaps, be said that these computations are so old and stale that they ought not to be reproduced at this stage of the controversy. The true question is not, are they old, but, have they been answered? I have met with no answer to them. Dr. Thornton, indeed (§ 12), by a computation somewhat similar—viz., seventy men to begin, rearing each man in thirty-five years five sons; and then at the end of 210 years by uniting together the half of each of the last two generations for the men capable of arms—brings out a result of 656,250. This he allows will meet the requirements of the text; but he refuses it as improbable.

45. The grounds he adduces for this conclusion are the following:—1. So large a number could not have dwelt in all

Lower Egypt. 2. The number of deaths in the wilderness must have been nearly fifty per day. This, he thinks, not probable; not because the death-rate is unusually high, but because the number of corpses in a limited space would be enormous. 3. The total number did not increase during the forty years' wilderness wandering (§13—15).

46. Let us examine these *seriatim*. Dr. Thornton, taking 2,000,000 as the entire population required by 600,000 fighting men, asks if we can "suppose so many to have been able to find habitations? The present population of Lower Egypt is about 2,000,000. But at the time of the Exodus there must have been Egyptians as well as Hebrews living in the country. We cannot put them at less than 1,000,000. Now, as the present population of Lower Egypt gives 340 to a square mile, a population half as large again would give 510 to a square mile, which is considerably in excess of 438, the number per square mile inhabiting Belgium, the most thickly-populated country known in the world."

47. On turning to Professor Hughes's "Manual of Geography" (London, 1869), the latest authority I have, I find him saying, "The population of Egypt numbers upwards of 5,000,000." Of course, the great majority are resident in Middle and Lower Egypt. Why Dr. Thornton limits his inquiry to Lower Egypt I do not know; for the Pharaohs reigned over all Egypt, as is shown by their statues and pictures wearing the crowns of both the Upper and Lower provinces. The population in their days was, of course, far greater than under Moslem rule. Josephus sets it down as seven and a half millions in his time, and Diodorus at nearly the same. These facts sufficiently refute Dr. Thornton's first difficulty.*

48. His second I am somewhat at a loss to appreciate. As I read it, it is this:—Since 600,000, the generation of men above twenty years, perished in the forty years, the daily death-rate, including women, but excluding those who perished by pestilence, must have been fifty per day. He again asks, "Is this probable?" Is what probable? The death-rate of fifty per day, which is 15,000 per annum, or two and a half per cent.? No; there is nothing unusual in this, which is in fact exceeded by the death-rate of Paris or London. "What appears enormous is not the population, but the actual number of dead bodies collected within a limited space." I confess this surprises me, that a charge—at least a sus-

* Dr. Thornton has correctly given the population of the whole of Belgium as 438 to the square mile. But its most fertile and best-cultivated province, East Flanders, maintains upwards of 700 to the square mile. (Hughes.)

picion—should lie against the veracity of the Pentateuch numbers on such a ground as this! Why, is it not self-evident that even if the camp had been actually affixed to one spot for the entire forty years, they would have been no worse off for the disposal of their dead than London, which does manage to put its dead out of sight without pestilence,—

“Though its clime
Is fickle, and its year most part deform’d
With dripping rains, or wither’d by a frost ;”

though it lacks the burning sun and the desiccating sands of the Arabian desert. But what are the facts? The wilderness wandering (as any good map will show) covered about 40,000 square miles. Thus, fifteen corpses had to be got rid of, on an average, in every square mile of such a soil and such a climate, in the course of forty years.

49. And the third is like unto it. Here it is, word for word. “These 620,000, strangely enough, leave behind them a progeny somewhat less numerous than themselves. Instead of 603,550, we have, at the numbering in the plain of Jordan, only 601,730. Instead of five sons, each man would seem to have had, on an average, a fraction less than one.” What is there *strange* in this, when “with many of them God was not well pleased;” when “forty years long He was grieved with that generation,” and swore in His wrath that every one of the whole number that came up out of Egypt, from twenty years old and upward, should die in the wilderness; when the whole period was one of judgment, and its protraction was expressly and solely in order that the carcasses of that rebellious generation should fall in the wilderness? Why, I say, is it strange, with this key in our hand, that Israel’s population did not increase during those forty years? It would have contradicted the whole economy of God, if it had.

50. The strength of the assault upon the cardinal number we are discussing lies, I think, in the argument which is embodied in Dr. Colenso’s chap. xvi., entitled, “The Exodus in the Fourth Generation.” His reasoning here is plausible; I hesitate not to confess it is forcible; at first reading it seems invulnerable. Yet, if it really cannot be answered; if it cannot be logically shown to be an elaborate *non sequitur*; our position must be untenable, his conclusion must be accepted, and, as a consequence, we must give up our Bible! For this is his conclusion:—“From this it can be shown, beyond a doubt, that it is quite impossible that there should have been such a number of the people of Israel in Egypt, at the time of the Exodus, as to have furnished 600,000 warriors in the prime

of life, representing, at least, two millions of persons, of all ages and sexes;—that is to say, it is impossible, *if we will take the data to be derived from the Pentateuch itself*" (i. 101).

51. The argument rests on the promise made by Jehovah to Abram, under circumstances of great solemnity (Gen. xv. 13—16);—"Know of a surety that thy seed shall be a stranger in a land that is not theirs, and shall serve them; and they shall afflict them 400 years. And also that nation, whom they shall serve, will I judge: and afterward shall they come out with great substance. And thou shalt go to thy fathers in peace; thou shalt be buried in a good old age. But in the fourth generation they shall come hither again: for the iniquity of the Amorites is not yet full." Of this last sentence Dr. Colenso says, with his usual confident assertion, "this can only mean in the fourth generation, reckoning from the time when they should leave the land of Canaan, and go down into Egypt." Then he adduces the recorded cases of Reuben and Levi, both of whom were represented by the fourth descendants in successive generation, reckoning in each case the son of Jacob as the first of the four. He arrays also Judah, another son, *some* of whose fourth descendants (in the same mode of computation) were in the Exode.

52. But these are all, *absolutely all*, the examples he is able to furnish, out of Holy Scripture, of the principle on which he so relies, and on which he builds so great an edifice. It is, when built, a pyramid standing on its apex. Let us see whether there is no counter evidence on the same matter.

53. I have already admitted that the reasoning built on these premises appears at first sight forcible. Yet it does not *prove* what is sought,—that *only* four generations intervened between the Eisode into Egypt and the Exode. And if this is not proved, nothing is proved. For everything depends upon the fact that *no more than* four generations occurred in any line; because else these may have been according to the abnormal and rare condition of patriarchal protraction, and rapid and frequent succession the rule. In some lines, four generations appear certainly to have reached from Jacob to the Exode, viz., those from Reuben, Levi, and Judah. But of *no other* of the twelve patriarchs can this be shown. On the other hand, some of them certainly produced more generations in the same time. Thus, Joseph, Manasseh, Machir, Gilead, Hephher, Zelophehad, —*six*. Again, Joseph, Ephraim, Beriah, Rephah, Telah, Tahan, Laadan, Ammihud, Elishama, Nun,—*ten*. And though Judah, through Hezron, reached the Exode in four protracted lives, yet, through the same fruitful grandson, he had more numerous stages of descent; for Judah, Pharez, Hezron, Ram, Amminad-

dab, Nahshon,—are *six* : and since Elisheba, the wife of Aaron, was the daughter of Amminadab, and her sons Nadab and Abihu, Eleazar and Ithamar, were made priests at the ordination of the priesthood (Exod. xxviii. 1), three months after the Exode, and therefore the youngest of the four was at least thirty years old, we have *seven*,—Judah, Pharez, Hezron, Ram, Amminadab, Elisheba, Nadab. And yet once more ; Judah, Pharez, Hezron, Chelub, Hur, Uri, Bezaleel,—*seven* : for this last was, at the Exode, a man of sufficient standing to be put in charge of the whole artistic work of the tabernacle. Nahshon, too, though two generations lower than Moses, must have been, not a mere youth, but a man of weight and standing ; for he was the prince or chiefman of the tribe of Judah, one of “the renowned of the congregation,” at the Exode (Numb. i. 7, 16 ; ii. 3 ; x. 14).

54. And Shelah was a grown man some years before Pharez was born (Gen. xxxviii. 14) ; so that his descendants, though nothing is recorded of this line, may well have been a generation in advance of the latter ; and so Judah may have been represented, through Shelah, by his *eighth* descent. The princes of the tribes are not, in general, traceable in the genealogies, either by their own names, or by their fathers’ ; or we should probably have additional evidence in this direction.

55. The lineage of Joshua, the son of Nun, as given in 1 Chron. vii. 22—27, is the loftiest mountain in the way of Dr. Colenso’s progress. He feels it, and labours hard to remove it (§ iii. *et seq.*). This he essays by three engines of war. (1.) “This is an exception to the rule, which prevails *universally* [the italics are his] in the Pentateuch.” Supposing it were, it is of equal authority. But it is not true. That the rule does not prevail *universally* I have above amply shown. (2.) He throws overboard the Chronicles, as of no authority. (3.) He asserts that “the Book of Chronicles itself exhibits the rule of the Pentateuch in other cases,” which he adduces. But, of these cases, two are Nahshon and Bezaleel, the one the sixth, the other the seventh, as shown above, instead of the fourth, which he arbitrarily calls “the rule.”*

56. He then proceeds to undermine the statement in his

* Dr. Colenso argues that Bezaleel was the fourth from Hezron (though he was *not* the fourth, but the fifth, in the sense in which Moses was the fourth from Levi), forsooth ; as if that were pertinent ; because Hezron was born in Canaan. But again, if it were pertinent, it is not true : it is impossible. Pharez, the father of Hezron, *must* have been a babe in arms at the Eisode. (See Gen. xxxviii.)

way: assuming (for which there is not a shadow of proof) that Joshua was *forty-five* years old at the Exode; and asserting that the statement,—that “Elishama, the son of Ammihud, was the captain of the host of Ephraim (Numb. ii. 18), about a year after his *grandson*, Joshua, had commanded the whole Hebrew force which fought with Amalek,”—is hardly credible. (See § 58, *infra*.) Then he charges contradictions against the narrative in 1 Chron., which rest, however, wholly on his gloss, the passage being capable of a self-consistent interpretation; and at last cites a reconciling view of Kuenen’s, the result of which, Dr. Colenso admits, “would perfectly agree with our other data.” Yet he rejects it, “*for the reasons above given*”; by which, I presume, he means his own self-constituted rule of only four generations (I can find no other “reasons given”); and this is worthless.

57. My own mode of reading 1 Chron. vii. 20—27 would be somewhat like this:—Ephraim (whose very name signifies *fruitful*, see Gen. xlviii. 16, 19) had nine sons, Shuthelah, Bered, Tahath, Eladah, Tahath II. (named perhaps in memory of the former already deceased), Zabad, Shuthelah II. (as before), Elzer, and Elead. The Gittites slew these last two. Then another son, Beriah, from whom came, after eight generations, Joshua. As Beriah’s daughter seems to have been co-ordinate with Aaron (in generation), she could have built the Bethhorons only by her descendants, who perhaps retained her name; unless, indeed, she had married a Canaanite, and had emigrated to Canaan in the early part of the sojourn in Goshen. This is by no means impossible: Elishama, who was six generations lower than she, was captain of the host of Ephraim at the Exode.

58. As to the generations, the following scheme is possible, and consistent:—

	An. Jul. P.
Assume that the Eisode into Egypt occurred in the year	
of the Julian Period	3008
when Joseph was 39, and Ephraim may have been 7.	
Ephraim may have had several wives, and so all his	
nine early sons may have been born by...	3033
Ezer and Elead, slain at Gath	3048
Beriah born... ..	3049
Rephah „	3068
Telah „	3086
Tahan „	3104
Laadan „	3122
Ammihud „	3140
Elishama „	3158
Nun „	3176
Joshua „	3194
Exode	3223

Thus Elishama would be 65 at the Exode and Joshua would be 29. This scheme supposes each son to become a father at the age of 18; an assumption surely by no means extravagant of the heirs of such promises.

59. It appears then that, of four out of the twelve sons of Jacob, we are able to assert on the direct authority of Holy Scripture, that the generations from them to the Exode from Egypt vary from *four* to *ten*; while, of the remaining eight patriarchs, the records are not sufficient to enable us to determine the point. It seems to me likely that the average was nearer the greater than the smaller number; that the men, for the most part, married early. At all events there is no warranty for the assertion that, characteristically and normally, a generation (in the sense of the word we have been assuming) is to be computed at fifty-four years.

60. I venture to suggest, however, that the words of the great Promise (Gen. xv. 16), may have had a very different meaning. What Dr. Colenso confidently asserts, as a self-evident fact, that the four generations must be reckoned from the time when the seed should leave Canaan and go into Egypt, is a gratuitous assumption. It rather appears that the "fourth generation" of ver. 16, looks distinctly back to the "four hundred years" of ver. 13; that the two periods are conterminous and co-equal. Now that the four hundred years were to begin with Abraham himself, and to be reckoned from the birth of the seed, *de quo agitur*, is generally admitted; and even by Dr. Colenso (§ 107). He was just a hundred years old at the birth of his son; and it might well be that Jehovah, speaking immediately with him, might take his own age at that then future epoch, as the standard of the generations He foretold, announcing that, after four such generations as Abraham's own, the seed should come back to Canaan.

61. It may be said this is but a gloss, a private exegesis of the passage, and that Dr. Colenso's is better. But, I submit, this is to lose sight of the true issue. It is enough for us, the defenders, to give a possible, a tenable interpretation, which being accepted, the narrative shall be consistent. It is for the opponent to show that there is *no possible* interpretation, on which the narrative can be true. If he has not done, if he cannot do, this, he has done nothing. Here is the venerable Record, bearing its witness: we must assume its truth, until it is *proved* false. It will not do to say, "If we take a certain passage in a certain prescribed sense, it is false," unless he can compel us to admit that sense; unless he can absolutely drive us from every other; unless he can prove no other tenable. Let us only be able to suggest

another sense of the given words, which is maintainable: it may not be necessarily the true one, but it affords an escape from his dilemma, and his argument is absolutely harmless.*

62. And such, I am bold to aver, is the case with this palmary argument of our great opponent.

63. The careful examiner will not fail to perceive that the ruling of Gen. xv. 16 ("fourth generation"), in Dr. Colenso's sense is the base on which the great majority of his numerical difficulties rest; and that this being shown to be unnecessary, to use no stronger a phrase, they also vanish. Such is, for example, the deduction of his chap. xvii., that, allowing the seed of Jacob to have had on an average $4\frac{1}{2}$ sons each, in four generations they would amount to 4,923, instead of 600,000. Yes; but carry on the same rate of increase a few generations more, I will not say to the tenth, as in Joshua's case, but to the seventh or eighth;—and the result will be 448,596 for the seventh, or 2,018,632 for the eighth.

64. Such, too, the matter of his chap. xviii., the census of the Danites and the Levites. For, as Dan was about 42 years old, so his own son Hushim may well have been 24, at the Eisode. Allow the above average of $4\frac{1}{2}$ sons to each generation, and we arrive at the vast number of 166,000 (or, including but the fathers and grandfathers as still surviving, considerably upwards of 200,000), instead of 62,700, at the Exode, in the *ninth* stage from the patriarch Dan, *which is parallel with Nun*, the father of Joshua.

65. The case of the Levites is, I admit, more difficult; because of the minuteness and precision with which the lineage of Moses and Aaron is limited to four stages from Levi. There may be a mystic reason for this,—considering their typical standing (*see* Heb. iii. 1-6; v. 1-4), analogous to that strange delay which seems to have marked the economy of God in the production of the Promised Seed of the Woman. Whether this be so or not, there is no certainty whatever, that the other sons of Levi were increased by no more than four successive generations in all, to the Exode.

* I ask careful attention to this point—one of very great importance in a discussion such as this; and the more because, by cursory readers and loose thinkers, it is generally overlooked. It is considered that the assaulter and the defender stand on the same ground with regard to suggested modes. In truth, as I say in the text, I am not obliged to prove my *modus* true; whereas, he is obliged to prove it false. In many and many a matter Dr. Colenso contents himself with asking, How could they do this? Where could they procure that? If I reply, I do not know how or where, he has gained nothing; but if I can suggest,—Possibly thus, or possibly there, it is amply sufficient, unless he can *prove* it impossible.

Since, if it were so, Libni and Shimi would be contemporary with Amram, and their sons contemporary with Aaron and Moses; and since Eliasaph, *the son of Lael*, was chief of the house of the Gershonites at the census, where can this Lael come? It seems there must have been more generations intervening than four. Gershon and Merari may both have had sons early, and so may their descendants; Kohath and his descendants late. Thus, while the latter has but four, the other two may have run on to eight or ten generations. In 1 Chron. xxiv. 26, 27, a third son, Jaaziah, is attributed to Merari.

66. The questions which Dr. Colenso raises connected with the duties of, and the provision made for, the priests, are of a different character, and must be met on other principles. He argues that, since the priesthood was limited to the male line of Aaron, and, after the death of Nadab and Abihu, there were but two sons of Aaron, there could not have been more than three priests in the wilderness. How could these have accomplished the multifarious duties assigned to them, particularly the sprinkling of the blood of the 150,000 lambs at the Passover anniversary? I reply, Eléazar and Ithamar may have had each numerous sons, though Nadab and Abihu died childless; and, though at the Exode none of these had attained priestly age, yet, seeing that Aaron was now 83 years old, his grandsons may well have been on the verge of 30, and so several, in succession, of each line may have soon taken their place in the priestly band.

67. But, in the opening of the national intercourse with God, there were already persons who had priestly standing, and performed priestly duties; and these seem not to have been Aaron and his sons. For, at the foot of Sinai, when the Law was given, not only was the whole nation set, contingently upon obedience, in a priestly standing, but (Exod. xix. 22) there were certain persons officially recognized as "*the priests*." And, somewhat later, on the summons to Moses and Aaron to come up to the Mount (xxiv. 5), Moses "sent young men, which offered burnt-offerings," &c. The absolute prohibition of all but the seed of Aaron to perform priestly service (Numb. xvi. 40) was not till after the insurrection of Korah; to the date of which we have no certain clue, though the margin of our English Bible puts it conjecturally, *cir.* 1471; that is, about the middle of the wilderness sojourn. It may be, then, that these primal priests for some years had a subordinate service in the sanctuary, till Aaron's grandsons were sufficiently numerous. Much of Dr. Colenso's difficulty is wholly dependent on our ignorance—*how* could they sprinkle

the blood of so many lambs? and is of a Siamese character. Perhaps the blood of many was collected into a common reservoir, and a basin of this being then dipped, the sprinkling of this was reckoned the sprinkling of the whole. Perhaps in other ways the case was met; but our ignorance *how* must not surely overthrow the distinct testimony. Even if the "how?" were absolutely inconceivable, the difficulty would not be greater than the carrying a verbal message from London to Bombay in five minutes would have been to our grandfathers.

68. One of Dr. Colenso's earliest "impossibilities" is, that the congregation could not be "gathered unto the door of the tabernacle" (as commanded by Jehovah, Lev. viii. 3); because, he says, the words "at the door" require that "they must have come within the court" (§ 35). Now only nine men could have stood "at the door," if the words are to be pressed with a literality which would be indeed absurd; and if not, where can we put a limit? If one part of the crowd touched the door, are not the terms met? Then the court itself was merely an inclosure of linen hangings. What if these curtains, of some eight feet high, were unhung for the occasion? There would then be opened an area, before the camp-tents were reached, of 2,000 cubits every way; the tabernacle standing in an open square of 4,000 cubits (7,200 feet) the side. A man could stand in a square cubit well. Now, if we suppose the assembly to have been limited to the east half of the area, facing the tabernacle door, we shall have 8,000,000 square cubits;—that is, standing space for eight millions of men. Whereas, the actual men, 600,000 in number, could be contained in a space of 360 yards wide by 600 yards long. It is highly probable, however, that in this, and many other instances, the "whole congregation" was gathered representatively, by their chief men or heads of families, not individually. For when (Exod. xii. 3) Jehovah commanded Moses and Aaron to "speak to all the congregation of Israel" about the ordinance of the Passover, we are informed that Moses (v. 21) obeyed this command by "calling for all the elders of Israel." And so *this* difficulty melts to nothing.

69. The example of Numb. xvi., on which Dr. Colenso rests to disprove this latter hypothesis, is not conclusive; for the assembly might consist of chief men, from whom the elders might be officially distinct. But here, the congregation, though "gathered unto the door of the tabernacle" (v. 19), were also (in part at least) about the tents of Dathan and Abiram (vv. 24—27), which were not less than 3,600 feet

away. One of two things: either (1) the congregation was one which, while it was "gathered to the door," reached also three-quarters of a mile away; or (2) the congregation was, *in bulk*, occupying its ordinary place in the tents of the camp, while, *in delegate*, it was assembled at the tabernacle door. Either hypothesis consists with the text, and either solves the difficulty.

70. Dr. Colenso has another chapter on this matter. "How is it conceivable that a man should do what [Moses and] Joshua are here said to have done?" (p. 36.) To this it may be replied, "*Qui facit per alium, facit per se.*" In the delivery of the Law to the people at the close of his course, while, from Deut. i. 1, 5; iv. 44, 45; v. 1, &c., it would seem that Moses alone and individually was engaged; yet, from xxvii. 1, we infer that the elders were associated with him in the work, they speaking as his delegates, and so lightening the labour; while yet it was, *essentially*, in each publication, the utterance of Moses. Again, we learn (xxxi. 28—30) that the minatory Song of chap. xxxii., which is said to have been spoken by Moses "in the ears of all the congregation," was actually spoken by him "in the ears" of "the elders of the tribes and their officers." And we may well suppose that Joshua at Mount Ebal (Josh. viii.) availed himself of the like resource, he reading personally to "the elders and officers and judges," or else to the Levites, the words of the Law, which they then repeated in various parts of the assembled crowd. Of course, we need not understand that more than the curses and the blessings of Deut. xxvii. and xxviii. were read; and this reading had been expressly prescribed to the Levites (Deut. xxvii. 14).

71. The "impossibility" of the transaction on Mounts Ebal and Gerizim is so strenuously insisted on, that it comes up again in a later volume of the same work (iii. 539). A good deal of the difficulty is of the character which I call Siamese; "it is not easy to see"—"in what way" this or that was conducted. But an aspect which furnishes another thrust at the populousness of Israel deserves a moment's consideration. If two millions of persons were gathered—"all the congregation of Israel, with the women, and the little ones, and the strangers that were conversant among them" (Josh. viii. 35), how could they stand? "They would stretch for miles" (§ 774); "no human voice could reach their ears" (§ 41). "Joshua cannot be supposed to have read first to one party, then to another: . . . the day would not have sufficed" (§ 42). Therefore the account is imaginary.

72. Now, it is admitted that the length of the valley between

the two mountains is three miles, and its breadth 200 to 300 yards. But people in a dense crowd can stand each in 18 inches square. They often do in London streets; not, indeed, comfortably, but enduringly. Allowing such a close crowd, 600,000 men could stand in 500 yards length of the valley, the width being 300 yards. For here would be 150,000 square yards, and four men to a square yard = 600,000. More than this is surely not required by the text. To suppose that every woman, and every infant, were present, merely to prove the story false, is to treat the Book of God as we would treat no other book; the words of Josh. viii. 35, legitimately mean no more than that there were women and children and strangers in the crowd, as is always the case in such crowds.

73. But, in the recent accurate survey of Palestine by means of the Exploring Fund, Lieut. Anderson finds and ("Recov. of Jerus." 464) describes and maps, in the side of Ebal, "a break in the regular slope of the hill, and a small, but steep, valley coming up from the vale below almost to the summit, forming a vast natural amphitheatre, in height equal to the mountain. Immediately opposite to this the steep slope of Mount Gerizim is similarly broken by a valley, forming a second natural amphitheatre of equal beauty and grandeur. In these two lateral valleys," continues the describer, "were assembled the twelve tribes of Israel under Joshua, six tribes on Gerizim, and six on Ebal. The Levites and the ark were in the strip of the vale, and the blessings and cursings were read before the whole congregation." Thus writes one, apparently without a misgiving of its truth, who was not only familiar with the scene, but was technically and officially surveying it. This oval amphitheatre is a mile and a half long at the summit, and a half or three quarters of a mile broad. (See the map.) It is 1,200 feet deep.

74. Now, what number of persons could crowd into this area, ready-made and provided for them? Taking, as above, the square cubit of 18 inches as our unit of measure, the area is $5,280 \times 1,760 = 9,292,800$ square cubits; to this, if we add a fourth more for the depth, we get upwards of eleven and a half millions of square cubits, or standing-room for an equal number of human beings.

75. I must close. At the outset I had prescribed to myself to adduce evidence that the numerical enunciations of the Old Testament are sound and trustworthy:—that they are, not only not systematically falsified, not exaggerated by wholesale, but, not even corrupted by unintentional infirmity, save in comparatively few examples, easily identified, and without much difficulty corrected. The theses I have essayed to maintain

are :—1. The numbers of the Sacred Narrative,—and more specially the 600,000 of Israel's warriors,—are integral parts of revelation, sustained by an immense array of collateral statements and allusions, of cross references, and computations whose elements are given. 2. Considering the circumstances, the numbers are not improbable, but very highly probable :—the ruling circumstances being—the Will, the Promise, and the Resources, of God. 3. The aim and scope of the Bible are other than are generally appreciated. In maintaining these, I have of necessity taken a place of antagonism to Dr. Colenso and the German school, who reject even the historical verity of the Pentateuch, and also to several much-respected members of this Institute, to whom the honour of God, and the Word of God, I know, are dear. I had intended to take up other points, against which charges have been laid ;—the early paternity of Ahaz and of Josiah ; the judgment at Bethshemesh ; the ark of Noah ; the metallic treasure in possession of Israel ; the slaughter in battles, the captives, and the plunder ; high numbers in the later historical books ;—and I think that something in vindication might be said on all these points, without resting much on the suggested resource of error through confusion of consimilar abbreviant symbols.

76. But the length of this paper warns me that if these points be further discussed, either *seriatim* or in association, it must be on another occasion. And thus I relinquish the momentous subject, soliciting pardon of God if I have dishonoured Him in darkening counsel by words without knowledge, and also of my respected antagonists if I have been betrayed into any words unseemly towards them.

“ Non mea, sed tua sunt, quæ sunt bona : non tua certè,
Sed mea sunt, si quæ sunt mala, summe Deus !
Nos tibi pro donis Grates quas possumus : at Tu
Suscipe quæ tua sunt, corrige quæ mea sunt.”

The CHAIRMAN.—I am sure it will be your pleasure to return a vote of thanks to Mr. Gosse for his paper. But before inviting any discussion upon it, there is another on the same subject, which has been prepared by Mr. Moule, and probably it will be better to read that now, and then take the consideration of the two papers together.

The Rev. H. MOULE then read the following paper :—

ISRAEL IN EGYPT : THE PERIOD OF THEIR
SOJOURN AND THEIR NUMBERS AT THE
EXODUS AND IN THE WILDERNESS. By the
Rev. H. MOULE, M.A., A.V.I.

MY object in this paper is to show, first, that the text of Scripture, interpreted by itself, states the period of the sojourn in Egypt to have been no more than 215 years; and secondly, that in round numbers 600,000 men, more precisely 603,550 men, from which the whole population at the Exodus and in the wilderness may be estimated at 2,500,000, is the number originally given by Moses, and is correct and true. The proof of the second of these propositions will of itself show how untenable is the theory laid down in a paper in the Journal of our Transactions on "The Numerical System of the Old Testament;" according to which theory, every one of the fifty or sixty numerical statements with reference to the adult male population of the Israelites at the Exodus and in the wilderness has, through "only a few trivial mistakes on the part of the scribe, a few slight misapprehensions on the part of the reader," been exaggerated a thousandfold. In the course of my argument it will also appear, that the existence of error in the original text to such an extent as in that paper is supposed, materially affects, in this case at least, the truth and inspiration of a large portion of the narrative. And mainly for this reason I propose, if permitted, to show in an appendix that of the five reasons assigned for this *casual* alteration of numbers—which reasons are, in fact, only conjectures—the first two rest on an error, and the fifth rests upon another conjecture.

2. Taking, for a moment, my two propositions together, I point to the fact that the raising up of a *nation* in the midst of another *nation* and within a *given time*, was the subject of

previous prophecy. Then, Moses, who records the several prophecies respecting this, records also their fulfilment. And with reference to *the nation*, his record of fulfilment is not only in general terms, speaking of it as "a great and populous nation,"—"as the stars of heaven in multitude;"—not only in round numbers, perhaps grounded, as reports of killed and wounded after a battle are, on some rough estimate; but it is given with the most remarkable fulness, variety, and exactness of detail of two numberings taken at the opening and the close of a period of thirty-eight years.

3. Let us look first at two or three of the prophecies. With reference, doubtless, to the more remote as well as to the nearer future, Jehovah promised Abraham to make of him "a great nation," and to make his seed "as the sand of the sea," "as the dust of the earth," and "as the stars of heaven for multitude." But, with distinct reference to the nearer future, He speaks thus of Abraham's seed in the line of Isaac and Jacob: "Know of a surety that thy seed shall be a stranger in a land that is not theirs, and shall serve them, and they shall afflict them 400 years. And also that nation whom they shall serve, will I judge: and afterwards shall they come out with great substance. And thou shalt go to thy fathers in peace; thou shalt be buried in a good old age. But in the fourth generation they shall come hither again."*

4. To Jacob the general promise is repeated: "I will make thy seed as the sand of the sea, which cannot be numbered for multitude."† And on his way into Egypt he is encouraged by the assurance: "I am God, the God of thy fathers; fear not to go down into Egypt; for I will *there* make of thee a great nation."‡

5. Now on a comparison of these two more particular promises, the following points are clear. 1. It was in Egypt that the seed of Abraham was to become a great nation. 2. It was from Egypt, then, that they were to come out with great substance. 3. Consequently, it was there that they were to serve and be afflicted. 4. It was from Canaan that they were to go down into Egypt, and it was to Canaan that from thence they were to return; and in Canaan—"a country not theirs"—Isaac and Jacob, the seed of Abraham, at the time of the utterance of the prophecy to Jacob, had been living as "strangers" and pilgrims for nearly 200 years. The period, therefore, during which they were to be "strangers in a land which was not theirs," cannot be conterminous with that of their servitude and affliction. The 400 years of the pro-

* Gen. xv. 13, 14, 16.

† Gen. xxxii. 12.

‡ Gen. xlv. 3.

phesy, just as the 430 years afterwards given by Moses as the exact period of the sojourning, cover the whole period. The former reaches from the birth of Isaac, the latter from Abraham's call, to the coming out of Egypt. Whereas the period of four generations, at the close of which they were to return to Canaan, reaches back no further than to the time of Jacob and his family going down thither. 5. The opening sentence of the prophecy to Abraham is therefore clearly parenthetical, and amounts to this, "Thy seed shall be a stranger in a land not theirs 400 years, during a portion of which time they shall serve and be afflicted." All this appears to me sufficiently evident from the prophecies. The record of their fulfilment fully confirms it.

6. Moses writes thus :* "Now the sojourning of the children of Israel, who dwelt in Egypt, was 430 years. And it came to pass at the end of 430 years, *even the selfsame day it came to pass*, that all the hosts of the Lord went out of the land of Egypt." Now, the form of expression in the first clause of this passage is very marked. I see no reason whatever for altering the translation. The exactness of expression, therefore, which is so clearly intimated in the last clause, ought to be extended to the first clause of the passage; and the words, "the sojourning of the children of Israel," ought to be considered as inclusive of the whole sojourning in Canaan as well as in Egypt. I would rest nothing on the addition to this effect made in the Samaritan Pentateuch and in the Alexandrine copy of the Septuagint. I turn rather to certain incidental but very exact notices of ages and dates in the history, which, fixing very exactly both the stay in Egypt and the sojourn in Canaan, prove that Moses intended in the 430 years to include both.

7. First, as to the period of the stay in Egypt, he informs us† that he was himself in the fourth generation from Jacob; and even that Levi was his maternal grandfather. He and his father Amram were the only two in the line of succession who were born in Egypt; Kohath and Levi having been born before the descent. He further lets us know that Levi, dying at the age of 137, must have lived in Egypt about 87 years, that Kohath lived to the age of 133, and Amram to 137, and that he himself was 80 years old at the Exodus. On the extreme hypothesis, then, that Amram was born during the first year of the sojourn in Egypt, and that Moses was born in the last year of Amram's life, the stay in Egypt cannot possibly be stretched beyond 215 years; whilst analogical

* Exod. xii. 40.

† Exod. vi. 16—20; Numb. xxvi. 59.

cases in the previous history show that there is no improbability, certainly no impossibility, in Levi having had a child born to him after having been 70 or 80 years in Egypt, when he was 120 or 130 years old, nor in his daughter, so born to him, having given birth to Moses when 55 or even 65 years of age. And thus, the whole period of 215 years is seen to have been spanned (even as Moses says it was spanned) by the three periods of existence in Egypt: first, by that extending from the entrance thither of Levi and Kohath, to the birth of Jochebed and her husband Amram; secondly, by the space of time between their birth and that of their son Moses; and lastly, by the first 80 years of his life.

8. Now, on turning to the previous history, it is, to say the least, very remarkable that a few incidental notices of dates in the lives of the Patriarchs will give us the other half of the 430 years, as the period of their sojourn "in a land which was not theirs," even in Canaan. From Abraham's entrance into Canaan to the birth of Isaac was 25 years. From that date to the birth of Jacob was 60 years. On his arrival in Egypt, Jacob tells Pharaoh that the number of his years was 130. We thus get again 215 years. Now these several coincidences are too many and too exact to be the result of accident; yet so incidental as to forbid the idea of design on the part of the historian. Though undesigned, however, by Moses for such a purpose, they appear to me evidently intended by Him who inspired Moses, to guide us to the truth in this important question.

9. But how marvellous then the increase of population from seventy persons to 2,500,000 in 215 years! Yes, and the inspired writers admit and assert the marvel; and more than that, they give us one or two special instances of this increase. In the first seventy years* Moses says of the children of Israel, that "they were fruitful, and increased abundantly, and multiplied, and waxed exceeding mighty; and the land was filled with them." The king that arose, who knew not Joseph, evidently felt the value of the people; but was acquainted with their purpose at some time to quit Egypt for Canaan, and such was their increase in his time (within the first 100 years) that he feared, lest, joining with some enemy of Egypt, they would be strong enough to get them out of the land.† For this reason *the servitude and affliction* foretold to Abraham was brought upon them. The endeavour to keep down the population extended even to the attempt by various devices to destroy every male child. But the recorded marvel is this,

* Exod. i.

† Ib.

that "the more they afflicted them, the more they multiplied and grew."* Again, after the first attempt to destroy the males, Moses says, "the people multiplied, and waxed exceeding mighty."† And this must have been the case more than eighty years before the Exodus.

10. By the fact that Moses was the grandson of Levi our attention is further called to this, that child-bearing, not only before, but for some time after, the Flood, continued to a far more advanced period of life than it does in these modern times. And in this is a cause of increase of the Israelites which renders all modern analogies, especially that of France, utterly futile. But again, while Moses was in the fourth generation from Jacob (and other individuals might have been similarly situated), we have intimations that in other families (and perhaps also in this), there might have been ten and even twelve generations in 215 years. In the genealogy of Ephraim ‡ Joshua is stated to have been at least the tenth in descent from Jacob. And of the correctness of this statement we have the remarkable confirmation in the recorded fact, that Joseph within seventy years saw Ephraim's children of the third generation. This would give, if we reckon from Joseph, an average of seventeen years for a generation, and twelve of these then might have been included in 215 years.

11. It is time, however, that we turn to the positive and distinct statements which Moses makes as to this much-questioned number. Only first let me again notice that which, by the author of the paper on "The Numerical System of the Old Testament," appears to be completely overlooked, namely, the interweaving of the idea of the vast multitude of people into the entire history of the Exodus, and its intimate connection with prophecy, with miracle, and with directions from Jehovah. I point first to its connection with prophecy. God had said to Abraham, "Thy seed shall be as the stars of heaven." And Moses writes, "Your fathers went down into Egypt, threescore and ten persons; and now the Lord thy God hath made thee as the stars of heaven for multitude."§ To Abraham it is promised, "I will make of thee a great nation;" and to Jacob, "Fear not to go down into Egypt, for I will *there* make of thee a great nation." And Moses not only asserts that God had in their case "taken a nation from the midst of another nation,"|| but he enacts a law that in all their subsequent generations every Israelite on presenting his first-fruits should confess before the Lord, "A Syrian ready to perish was my father, and

* Excd. i.

† Ib.

‡ 1 Chron. vii. 20—27.

§ Deut. x. 22.

|| Deut. iv. 34.

he went down into Egypt and sojourned there with a few, and became *there* a nation great, mighty, and populous.”*

12. Take next the two statements which may be said to be in round numbers. The first occurs in the solemn description of the march out of Egypt “of all the hosts of the Lord;”† the second is in the address of Moses to Jehovah, when a supply of flesh for a whole month had been promised. “The people amongst whom I am are 600,000 footmen; and Thou sayest, I will give them flesh, that they may eat a whole month. Shall the flocks and the herds be slain for them, to suffice them? Or shall all the fish of the sea be gathered together for them, to suffice them?”‡ It has been said that numbers have nothing to do with the miracle, in the narrative of which they occur: we may receive the miracle while giving up the numbers as untrustworthy. Have numbers nothing to do with this miracle?

13. But turning now to the more exact statements of numbers, let any judge if *casual* error in all of these together be within the range of possibility. In the second and in the last year in the wilderness, Moses, at the command of Jehovah, “took the sum of the congregation of the children of Israel, all that were able to go out to war.” On the first occasion he and Aaron did this in conjunction with twelve assessors, each of them a head of the house of his fathers. On the second occasion Eleazar was appointed with Moses, and, as we may conclude, the same number of assessors. At each census every tribe is numbered separately (46,500, 74,600, &c.), and then the sum total is set down—in the first instance 603,550, and in the second 601,730.§

14. These numbers are exclusive of the tribe of Levi, which subsequently is numbered with the same exactness. The families of Gershom, Kohath, and Merari are first numbered separately, and the total is then given—22,000 souls.|| The firstborn males, instead of whom the Levites were taken as the Lord’s, were found on a similar numbering to exceed the number of the Levites by 273. This minute difference is noted, and five shekels a head, or 1,365 shekels redemption money required of the 273, and, according to the word of the Lord, given by Moses to Aaron and his sons.

15. In giving the arrangement of the camp¶ in four divisions of three tribes each, the number of each tribe is repeated; the number of each division is given; and the grand total is again stated to be 603,550.

* Deut. xxvi. 5.

§ Numb. i. xxvi.

† Exod. xii. 40.

|| Numb. iii.

‡ Numb. xi. 21, 22.

¶ Numb. ii.

16. But the most remarkable occurrence of this exact number, especially as exhibiting the impossibility of any *casual* alteration, or the so-styled “high exaggeration through a *smear* or a *blot*,” is that found in the statement of the amount of gold and silver and brass used in the work of the tabernacle. The silver is said to have amounted to 100 talents and 1,775 shekels. Of the 100 talents were cast the sockets or bases of the sanctuary, and the sockets or bases of the vail—“a talent for a socket.” Of the 1,775 shekels were made the hooks for the pillars; and the chapiters were overlaid and filleted. It may be remarked, by the way, that these sockets, weighing about 1 cwt. each, were the only foundation of the tabernacle, and five tons weight of metal is not too much to allow for such a purpose. What, however, is the source of this vast supply of silver? Moses replies, “A bekah for every man, that is, half a shekel, after the shekel of the sanctuary, for every one that went to be numbered, from twenty years old and upward, *six hundred and three thousand and five hundred and fifty*.”* Now a talent contained 6,000 half-shekels; 600,000 contributors then, of half a shekel each, would be required to make up 100 talents; and 3,550 contributors of the odd 1,775 shekels added to these, exactly complete the thrice-repeated total of the first census, 603,550. Now, when two amounts exactly agree, and when, by him who gives them, they are evidently intended so to agree, it is incredible that *casual* error should occur with such coincidence in both. If accidental in one, it must have been designed in the other.

17. Further, if the amount of metal in this passage be exaggerated, there must be equal exaggeration in the description of the tabernacle and its furniture,† and equal error in the recorded instructions respecting it given to Moses by Jehovah.‡ For the amount of metal is not in excess of the work done and required to be done. By error, then, in this numerical statement, at least a cloud would be thrown over seven chapters of the Book of Exodus.

18. Notwithstanding all this, the theory of a *casual* alteration of numbers is extended to this very passage. The last “set of numbers from the Pentateuch,” with which readers of the paper on “The Numerical System of the Old Testament are troubled,” is the sum total of the metals used in the work of the tabernacle. Discredit and doubt are cast upon the statement by the inquiry—“Is there not some misapprehension of

* Exod. xxxviii. 26.

† Exod. xxxv.—xxxviii.

‡ Exod. xxv.—xxvii.

figures here ?” And the only two reasons given for this doubt are not any of *the five*, but first, that the weight of these metals, together with that of boards, hangings, and fittings, was too great to be easily transported from place to place; and, secondly, that the gold of itself was too considerable a sum for the Israelites to have become possessed of *by borrowing* of the Egyptians.

19. Now, by a brief consideration of these two reasons further light may be thrown upon the truth, the reasonableness, and the consistency of the history and of the numbers contained in it. First, if in proportion to the reduced number of 600 men the able-bodied Levites had been only 20 or 30, the removal of ten or twelve tons from place to place by these would certainly have been difficult. But what if, according to the census, they were 7,000 ?* What if that number was divided into three bodies, with special portions of this burden allotted to each ?† What if, according to their respective burdens, the princes of the congregation provided for one, two waggons and four oxen; for another, who had to carry everything on their shoulders, no waggons; and for the third, who had to carry the silver, the brass, and the boards, four waggons and eight oxen? could not 7,000 men, with six waggons and twelve oxen, transport with perfect ease twelve tons weight? But, is there not here a marked adaptation of the power employed to the burden to be borne, which serves to confirm the statement respecting the latter?

20. As to the second reason, “a considerable sum (£259,840) for the Israelites to have become possessed of *by borrowing* of the Egyptians,”‡ I would observe that it must be well known to any Hebrew scholar that the first and principal signification of שאל (*shá-al*) is to *ask, demand, or require* without any idea of return being involved; that in the Hebrew Scriptures this is the prevailing meaning of the word; that in its three occurrences in the Book of Exodus the Septuagint substitutes αἰτεῖν, and the Vulgate *peto* or *postulo*; and that if these and the following circumstances be duly weighed, it must be admitted that either *ask, demand, or require* would in all these cases be a fitter rendering than the word, to *borrow*.

21. The circumstances to which I refer are these: this transaction of the Israelites was the subject of a divine command, twice repeated; and in each repetition of this command an expression is used, which, to my mind, serves to clear up the

* Numb. iv. 22—41.

† Numb. vii. 1—9.

‡ Exod. iii. 22; xi. 2; xii. 35, 36.

whole affair. In the first instance* every woman is directed to *ask, demand, or require of her neighbour and of her that sojourneth with her in her house*; and in the second,† every man is to ask, demand, or require of *his neighbour*, and every woman of *her neighbour*, jewels of silver and jewels of gold, or gold and silver vessels. Now, when this request or demand was made, the Israelites were all gathered into the land of Goschen. On the infliction of the plague of flies they were so separated from the Egyptians that neither that nor any subsequent plague touched them. The question, then, to be asked here, is this: How came it that numbers of the rich Egyptians should at that time not only dwell in Goschen, but sojourn even in the houses of the Israelites? And the reply lies on the very face of the narrative. With the increasing conviction on their minds that Egypt was being destroyed by the judgments of the God of Israel, and with the immunity enjoyed in Goschen before their eyes, they sought, in numbers increasing as each plague descended, to share in that immunity; and fleeing to Goschen with their riches, entreated shelter even under the roofs of the persecuted race. The Israelites, bearing in mind the divine direction, naturally and fairly asked a recompense in the portable wealth of the time. But, besides this, they had for more than two centuries resided in one of the most fertile portions of the most fertile land in the world, as a pastoral and an agricultural, if not a trading, people. They must have had houses and lands of which to dispose, and produce of various kinds, which they could not carry with them. Might they not, in exchange for real property, have demanded a very considerable amount of gold and silver? Yes. Only take the Scripture narrative as it stands,—only admit that a nation of upwards of 2,000,000, after a residence of 200 years, went forth from another—and *that* a rich and powerful nation—and there is nothing whatever to excite suspicion of a misapprehension of figures in the statement, that the former had become possessed of £259,840.

22. For, in conclusion, what was this Egypt of which so much is made, when her history appears adverse to Scripture, and of which, when her history and her monuments tend to confirm Scripture history, so little is made? Was she an insignificant nation with a population “not to be put at less than a million,” and likely to be thrown into a state of terror and commotion by the rising of 600 armed men, and the emigration of a retinue of 2,500 or even of 6,000? Was she not, rather, that Egypt which, 200 years prior to the Exodus,

* Exod. iii. 22.

† Exod. xi. 2.

became, in God's providence, the market of the surrounding countries? Nay, which 200 years beyond that time was evidently a country of a pastoral, an agricultural, and even a commercial character? Was she not already renowned for wisdom, and famous for her arts and her science? Was she not the Egypt of the Obelisks, the Sphinx, and the Pyramids? —the Egypt of Zoan, of Memphis, and of Thebes—

—Θῆβαι

Αἰγυπτίαι, ὅθι πλεῖστα δόμοις ἐν κτήματα κεῖται,

Αἶθ' ἐκατόμυλοι εἰσι, διηκόσιοι δ' ἀν' ἐκάστην

Ἀνέρες ἔξιχνεῦσι σὺν ἵπποισιν καὶ ὄχρεσφιν.*—Iliad ix. 381.

23. Yes, in a country with such vast cities, and capable of producing such immortal works, Israel was formed into a nation. Great by the side of such a nation as this, and, with the aid of her God, shaking off its dominion, Israel marched forth “with a high hand.” There is every reason, then, to believe that the riches, partly amassed during 200 years’ residence in such a country, and partly acquired in that terrible struggle for her independence, must have been vast. There is no just reason to doubt the repeated statement of Moses, that the armed force of Israel at the Exodus was 600,000 men.

* “And all that opulent Egyptian Thebes
Receives, the city with an hundred gates,
Whence twenty thousand chariots rush to war.”

COWPER'S TRANSLATION.

APPENDIX.

I HAVE asserted in the foregoing paper that the first two reasons or conjectures assigned for such a *casual* “alteration of numbers” in the Hebrew text as shall leave “the history of facts incorrupt,” are based upon error, and that the fifth is a conjecture resting upon another conjecture. The first is as follows:—

25. “The word for *thousand* in Hebrew (eleph) also means *ox*. This may have led to one or two mistakes, if not more.” But how? For אֵלֶף (eleph), even in its plural form אֲלָפִים (ālāphim), can be translated *oxen* only *four times* throughout the Old Testament, and in the historical books only *once*; where, in the authorized version, it is represented by the word *kine*. In the singular אֵלֶף it *never* signifies *ox*. Whereas, if many *thousands* are to be expressed, the word for *thousands* is always אֲלָף, *singular* (exactly according to our idiom *five hundred*, and *ten thousand*); אֲלָפִים, the plural, is used only when the number of thousands is *under ten*. How, then, is it possible that in any one of the alleged cases of “highly exaggerated numbers,” such exaggeration could have been caused by אֲלָפִים, which in those high numbers is never used, sometimes signifying *oxen*? The second reason is this:—“Marginal comments and corrections and the figures heading *haphthoroth* or liturgical sections, may have become incorporated with the text.”

26. The possibility of marginal comments and corrections having become incorporated with the text is not to be denied; although its probability to any large extent is so questionable that before this reason, even so far, can have any weight, instances of such probable incorporation must be adduced. As to *Haphthoroth*, they exist only in the Prophets. They must here, therefore, be confounded with *Parashoth*—the liturgical sections of the law. These I have looked through, and not a single instance can I find of the probable incorporation of the פַּסָּק, or כִּסּוּס at the head of the fifty-four sections with any passage containing one of the so-called exaggerated numbers.

27. The following is the fifth reason:—“But the most fertile source of errors in the text of Scripture as regards numbers is

the very inartificial manner in which those numbers were represented. The letters of the alphabet were employed to signify units, tens, and hundreds; two dashes or dots after a letter made it represent so many thousands. A smear, therefore, or a blot would raise an authentic into a highly exaggerated number. Again, numbers might be mistaken for words, and words for numbers."

28. Now the use of Hebrew letters on the Maccabean coins is a fact. But their use in the original manuscripts of the Old Testament is not by any means an established fact. On the contrary, the oldest Hebrew manuscripts known invariably express numbers in words. And considering the scrupulous regard of the Jews for the integrity of the sacred text, we may fairly conclude that it was ever so done. This conclusion is confirmed, too, by the fact that the Septuagint translators did the same. Discrepancies and difficulties, some of which are given in the paper to which I refer, led Glassius and others to conjecture that these had arisen from an early use of numerical letters. This is the only ground for the conjecture. Yet this conjecture is now converted into a fact; and asserted to have been "the most fertile source of errors in the text of Scripture."

29. Happily, the one attempt in the paper to apply this one of the five reasons to the elucidation of a text—one of the texts, singularly enough, on which Glassius grounds his conjecture—fails to convince. It is the passage which states the number of men smitten at Bethshemesh, because the men of that place looked into the ark.* The Authorized Version of the words (with which the Septuagint and the Vulgate nearly agree), is this:—"And He smote the men of Bethshemesh, because they had looked into the ark of the Lord; even He smote of the people fifty thousand and threescore and ten men." I must say I consider this translation anomalous. "The exaggeration," therefore, here does not of necessity exist in the Hebrew text. By Dr. Waterland, and others, another rendering is given, which removes this exaggeration: "He smote the men of Bethshemesh because they looked into the ark of the Lord, and he smote of the people threescore and ten men out of fifty thousand." One objection to this rendering in the paper on "The Numerical System of the Old Testament" is, that fifty thousand for the male population of so inconsiderable a town as Bethshemesh is an improbable number. To this I reply that the text intimates that on an occasion of such great national and religious interest, the

* 1 Sam. vi. 19.

men of Bethshemesh did not stand alone. The *difference* between *men* and *people*, which the Vulgate marks by the words *viros* and *plebis*, and which is asserted not to exist in the Hebrew, does exist there; and the most literal rendering of the words so far is this—"He smote *of* or *among* the *men* of Bethshemesh because they looked into the ark of the Lord, and he smote *of* or *among* *the people*."

30. The other objection to this rendering of the words "seventy out of fifty thousand" is, that it involves the insertion of the preposition *out of*. But no forced or unnatural insertion of that preposition is required in such a connection. Glassius in his "*Philologia Sacra*," states the omission of מ *of*, or *out of*, to be an established idiom. And one of the examples given by him exactly meets and illustrates the case before us. It occurs in the intercession of Abraham on behalf of Sodom—*

אולי יחסרון המשים הצדיקים חמשה
Five the righteous fifty lack peradventure

"Peradventure there lack five *of* the fifty righteous." On which Glassius remarks, "pro מהמשים *de* quinquaginta viris."

31. In preference to so reasonable a rendering, the paper on "The Numerical System of the Old Testament" suggests the following:—"Still I think I shall be pardoned if I suggest that in the old Hebrew character the symbols of 'out of a thousand,' and 'fifty thousand,' might be most easily mistaken for one another; and that the *seventy* itself is but a mistake for *the indefinite number seven*. Those who understand Hebrew are aware that the tens are expressed by the plurals of the units. 'Seventy' is in the Hebrew expressed by 'sevens.' Here is an opportunity for error; to which we may add, that though the character expressing 'seventy,' is not particularly like that denoting 'seven,' the names of the letters Ain and Zain are not unlike one another." In short, the rendering to be obtained by this singular process is to be, "out of a thousand *people* He smote several."

32. Now let the symbols for "out of a thousand," and for "fifty thousand," in the old Hebrew character be produced, that their similarity and the facility with which one might be mistaken for the other, may be seen. I cannot myself regard the suggestion to be pardonable without this.

33. The supposed *casual* substitution, however, of the symbol of "seventy," for the symbol of "seven," was an impossibility.

For even, if for a moment it be admitted that numerical letters were then in use, and if further it be admitted that *through the similarity of the names of the letters Ain and Zain*, a careful scribe might accidentally have written "seventy" instead of "seven," yet the concord of Hebrew numerals would have necessitated an alteration of the text, designed to agree with this accident. The words in the present text are שבעים איש, *shiveem eesh*. Had it originally been *seven* instead of *seventy*, it would have been written שבעה אנשים, *shivvah anáshim*. Alteration to such an extent from the mistake of one letter or symbol for another is evidently, then, an impossibility.

The CHAIRMAN.—The first thing we have to do is to return a vote of thanks to Mr. Moule for his paper. I may also state that our Honorary Secretary has in his hands a letter from the author of the paper read on the 7th February last year, which is the cause of the papers read here to-night being written. It appears desirable that that letter should now be read.

Captain F. PETRIE then read the following letter from the Rev. Dr. Thornton :—

I am glad to have the points I have mooted thoroughly discussed ; but I most strongly and emphatically protest against the way in which my name is mixed up with that of Dr. Colenso, whose avowed opinions lie under the gravest censure of the religious body to which he professes to belong, and of which I also am a humble member and minister. Should Mr. Gosse's paper be printed, I shall request that this protest be appended to it. I desire to repeat what I have already said, that my argument differs *toto cælo* from Dr. Colenso's. He says, "Because these numbers seem incredible, therefore the Bible, of which they are part, is not the Word of God." I say, "Because the Bible is, every part of it, the Word of God, therefore some of these numbers must be considered incorrect." I propose to rectify, or to disregard, some of the numbers ; he flings away numbers and Book together. He writes as a professed and avowed sceptic, I as a stanch believer. He is ready and willing to allow the whole Book to be a clumsy forgery ; I hold to the Book, and shall be ready to hold to the numbers also, if I find any argument to show that they must really be considered an integral part of the Book.

Whilst I protest against being in the smallest degree identified with that unhappy enemy of the Bible, I thank Mr. Gosse for the tone of his paper. I am sure he did not intend to cause—he certainly has not caused—the least uneasiness either to me or those who think with me. I am glad to find he has an opinion, holds it stoutly, and is ready and able to defend it. I respect and admire the man who does so, however much he may differ from me, and am quite open to conviction, and thankful for all reasoning that may tend to preserve me from error. Surely from the collision of minds, in loving argument rather than in hostile dispute, sparks will be struck out to glitter in concert with the Great Lamp of Truth.

Mr. Gosse's arguments are, I must confess, not all new and not all overpowering. Those which he urges against Colenso are to be found, I think, in the late Dr. M'Caul's able and interesting defence of the Pentateuch. Those which more nearly concern me fail to convince me that my views, as a whole, are erroneous, whatever be the correct way of applying the principle to details. I will say this much, that the careful weighing of his and Mr. Graham's remarks, inclines me to think that I have been hasty in putting the number of the Israelite warriors so low as I have done, and that the words of the sacred narrative are, as he suggests, too strong to be applied to a tribe consisting of only two or three thousand. But I cannot see that I am giving up my Bible and all its blessed teachings, its comforts for the present and its hopes for the future, if I decline to believe that a son was two years older than his father (2 Chron. xxii. 2), and at the same time eighteen years younger (2 Kings viii. 26), or that 40,000 (1 Kings iv. 26) and 4,000 (2 Chron. ix. 25) are the same number. If any of these numbers are incorrectly transcribed, so may others have been.

I must repeat and adhere to the principles I laid down in my original paper, viz. :

1. Many, though not all, of the numbers which we find in our present text of the Old Testament, are not the numbers given by authors of the various books, but have in some way become incorrect or are misunderstood, some being greater, some smaller than the real numbers.

2. Numbers and facts stand on a different footing, the latter being capable of none but intentional falsification, the former being easily corrupted.

3. While we fully believe that the Deity can do, and does, whatever He wills, and that all miracles recorded in Scripture *as such*, did really take place, still we must also hold that He is not lavish of unnecessary miracle.

The "fallacy of quotations" is one into which I always am reluctant to run the risk of falling; but I cannot forbear saying that if a want of reliance on the correctness of Old Testament numbers, as at present understood, be a mark of declension from the faith—if it be an article of the Christian belief that 50,070 men were smitten for looking into the ark, or that Samson slew one thousand in an afternoon—I am an unbeliever in excellent company. The late Rev. T. H. Horne is not usually considered to have identified himself with the sceptical or even the "Broad" schools of his or any other time, but I find in his well-known "Introduction to the Scriptures" the following:—

"Many of these numbers which to us appear almost incredible in some places, and contradictory in others, are owing to mistakes in some similar letters." "The corruption may be accounted for from the transcribers having carelessly added or omitted a single cipher" (Append. III. i. § 3). "If there be no mistake in the numbers, which probably are incorrect" (Append. III. viii. 6). "It is possible that there may be a corruption in the numbers" (*ib.* 8). Exactly my view.

With respect to the Rev. H. Moule's paper, "*Israel in Egypt*," Dr. Thornton says, in a second letter :—The following are the *Old Hebrew* letters to which I referred in section 8 of my paper :—

"*Fifty* thousand 7L†Y

"*From* a thousand 7L†Y

"Two thousand (*perhaps*) 7L†Y for YZ7L†

"*In* a thousand 7L†Y

"The *form* of the letters is copied from Ballhorn's 'Alphabete orient. u. occident. Sprachen.'

"In other matters I do not wish to engage in controversy with one who is really on the same side as myself in defending the truthfulness of Revelation against its enemies."

On account of the lateness of the hour the discussion was then adjourned to June the 19th.

ORDINARY MEETING, JUNE 19, 1871.*

CHARLES BROOKE, ESQ., F.R.S., VICE-PRESIDENT, IN THE
CHAIR.

The Minutes of the last meeting were read and confirmed, and the election of the following Members was announced :—

MEMBERS :—Augustus Frederick Bayford, Esq., LL.D., Senior Registrar of the Court of Probate, and Chancellor of the Diocese of Manchester, 38, Hamilton Terrace, St. John's Wood ; George Brightwen, Esq., 8, Finch Lane ; J. W. Harrison, Esq., 156, Hampstead Road.

ASSOCIATES, 2ND CLASS :—Rev. Samuel Arnott, M.A., Vicarage, Turnham Green ; Rev. J. F. Stevenson, LL.B., King's Road, Reading, Berkshire.

Also the presentation of the following work :—

Transactions of the Royal United Service Institution, No. 62. From the Institution.

The HONORARY SECRETARY.—Before we commence the discussion of the two papers read at our last meeting, I wish to state that, after it took place, I communicated with Dr. Birch, of the British Museum, and the Rev. Stanley Leathes, Professor of Hebrew at King's College. The former has written to say that he regrets a previous engagement will prevent his being here to-night. With respect to one question raised in Dr. Thornton's paper and those now before us he adds—

“In regard to the numbers mentioned at the Exodus, no light upon this point is thrown by any recent researches into the Egyptian or Assyrian monuments, and I have nothing to advance in the proposed emendations of text or improved interpretations of the passages there cited.

“The question of how the numbers were written at the time of Moses must always remain a point for discussion until some contemporary Hebrew inscription is found. The Egyptians always wrote by cipher, the Assyrians and Babylonians sometimes by cipher, at other times by words, and there is no contemporary Phœnician inscription to show how these people calculated at the time.”

Professor Leathes says—

“I fear I shall not be able to attend the meeting on Monday. . . . I have not made the numbers of the Pentateuch my peculiar study, but I may

* See Note, first part, page 348.

say as much as this, that from what I see of the papers you have done me the honour to send, I agree with that of Mr. Moule rather than with Dr. Thornton's."

He adds that he is disposed to think the subject not open to the great uncertainty the latter attributes to it in some parts of his paper. Many of these Dr. Thornton has touched on in his letter, which I had the pleasure of reading at our last meeting.

Rev. H. MOULE.—Before we commence, I should like to ask if the discussion of the two papers can be kept separate and distinct, as then the speakers will not be liable to confuse the statements made by one author with those made by the other.

The CHAIRMAN.—If a member attributes to an author anything which is not contained in his paper it is open to that author to rise to order and correct it, and if a member makes a statement which another knows to be incorrect, he may rise to order and correct it at once.

Rev. C. GRAHAM.—I think that will meet the case.

Mr. MOULE.—I am quite satisfied.

The CHAIRMAN.—I may add that the Council, believing that it will not affect the real points at issue, except paragraphs 31 to 33 from discussion, as they touch upon matters purely theological and controversial.

Rev. C. A. ROW.—The objection which I make to Mr. Gosse's paper is not confined to its details but goes to its great principle, and so far as Mr. Moule's paper is concerned, it is impossible to discuss the two separately; and for this reason, that both Mr. Gosse and Mr. Moule make no reference to the important statements of Dr. Payne Smith in his late Bampton Lectures, statements which I hold to be so important that in the discussion on Dr. Thornton's paper I drew special attention to them. Those lectures contain a view of this case which removes at least half the difficulties which are felt respecting the high numbers in connection with the Exodus. I will begin by drawing attention to Dr. Payne Smith's views on this point, supported as they are by Professor Rawlinson, who is quoted by Mr. Gosse. Dr. Payne Smith lays down, and I think correctly, that it is against the testimony of Scripture to suppose that all who came out of Egypt were descended from Jacob. He considers that there were not more than 80,000 at the Exodus so descended. Ancient nations consisted of several distinct bodies. Jacob's descendants constituted the body of the nobles, and there were also the households and clans of the Jewish people. These were largely made up of dependents and slaves, though treated very differently from slaves in our own day, who gradually acquired their freedom in the same manner as in all ancient states. Dr. Payne Smith also lays it down that there was originally a *plebs*—that mixed multitude that came out of Egypt forming it; and that the numbers of the families of the patriarchs were manifestly small, as is seen from their genealogies; that none of the ancient proprietors mentioned in the Bible were small proprietors, but all large ones; and that the lands of Canaan were assigned in proportion to the size of a man's clan or household, the head of the clan being the chief. I will now read the statements of Pro-

fessor Rawlinson on this point : they are substantially the same as those of Dr. Payne Smith.

“Now here, before we can form any judgment, two things have to be determined : What was the number of the Israelites when they entered Egypt ? What was the duration of their stay there ?—What was their number when they entered Egypt ? We are commonly told, seventy souls. Now, no doubt these words occur in Scripture, ‘All the souls of the house of Jacob which came into Egypt were three score and ten.’ But when we come to look into details, we find first that the seventy souls of Jacob’s descendants comprise only ten women, the married daughters and grand-daughters of Jacob not being mentioned (who yet, we are told, followed the migrations of the tribes) and no account being taken of the wives of his sons and grandsons. Supplying these omissions, we have for the family of Jacob as it entered Egypt 267, instead of the number seventy—or nearly four times the ordinary estimate. The children of Israel entered Egypt with their households or retainers.* What the size of a patriarchal household was we may gather from the history of Abraham, who had 318 trained servants born in his house capable of active military service. It has been well observed that ‘we should scarcely find so many in a clan of 3,000 souls.’ Jacob’s retainers were likely to have been more numerous, rather than less numerous, than those of Abraham, and the conclusions of Kurtz that they amounted to several thousands is therefore perfectly reasonable. It appears to me quite probable that the tribe which took possession of Goshen on the invitation of Joseph and Pharaoh, was a body of five or six thousand persons.

“Next, as to the duration of the sojourn in Egypt, the Hebrew text lays it down very positively that it was 430 years. The best manuscripts of the Septuagint agree. There was a tradition among the later Jews which brought down the term to 215 years ; but this tradition cannot reasonably be set against the plain words of Exodus, and consequently we must take 430 years as the duration of the sojourn.

“Is it, then, or is it not conceivable that under the circumstances of the time and place a tribe or clan of 5,000 persons may have increased in 430 years to one of one or two millions,” &c., &c.†

If, then, Jacob’s family was thus large, the incorporations numerous, and the period was 430 years, which Professor Rawlinson maintains, and not the shorter period, then there is no difficulty in supposing that the lineal descendants of Jacob increased to about 80,000, and the others to a much larger number. At the same time let me say that Professor Rawlinson is quite of opinion that the numbers mentioned at the Exodus are maintainable, but allows that there are some difficulties in the way. He says :—

“If the difficulties of the multiplication, as stated, of the exit from Egypt, the march, the passage of the Red Sea, and the sojourn in the wilderness were all allowed to be as great as represented, it would be enough to reply

* The word *tath*, translated “little ones,” means households. The Septuagint translates it by *oikia* or *συγγένεια*, Gen. xlv. 5.

† Professor Rawlinson’s lecture, delivered at St. George’s Hall, 1871 ; being one of the Christian Evidence series. Hodder & Stoughton.

that there may have been a corruption of the numbers—the addition, say, of a cipher in each case, and that the whole narrative would stand good, and the difficulties disappear, if for 600,000 men we read 60,000.”

Let me now draw attention to the really important point in connection with this subject—the hard manner of putting it that if a man cannot accept all the difficulties in Biblical numbers he therefore rejects the Divine authority of Christianity itself. The Council of the Institute have eased me of some of my difficulties by deciding that the paragraphs in Mr. Gosse’s paper [paragraphs 31, 32, and 33] are not to be the subject of discussion, but there is quite enough left to show the ideas of the author on the subject. In the fourth paragraph strong language is used. I am ready to let the matter rest on the exceedingly high authority of Bishop Butler. He says :—

“ These observations, relating to the whole of Christianity, are applicable to inspiration in particular. As we are in no sort judges beforehand by what laws or rules, in what degree, or by what means it were to be expected that God would naturally instruct us ; so upon his affording us light and instruction by Revelation, additional to what he has afforded us by reason and experience, we are in no sort judges by what methods, or in what proportion it was to be expected that this supernatural light and instruction would be afforded us. . . . In like manner we are wholly ignorant what degree of new knowledge it were to be expected God would give mankind by Revelation upon supposition of his affording one ; or how far ; or in what way, he would interpose miraculously to qualify them to whom he should originally make the Revelation for communicating the knowledge given by it ; and to secure their doing it to the age in which they should live, and to secure its being transmitted to posterity. . . . Nay, we are not in any sort able to judge whether it were to have been expected that the Revelation should have been committed to writing, or left to be handed down, and consequently corrupted, by verbal tradition, and at length sunk under it if mankind so pleased, and during such times as they are permitted, in the degree they evidently are, to act as they will.

“ But it may be said that a Revelation in some of the above-mentioned circumstances, one, for instance, which was not committed to writing, and thus secured against danger of corruption, would not have answered its purpose. I ask, What purpose ? It would not have answered all the purposes which it has now answered, and in the same degree ; but it would have answered others, and in the same or different degrees. And which of these were the purposes of God, and best fall in with His general government we could not at all have determined beforehand.

. . . . “ And thus we see that the only question respecting the truth of Christianity is, whether it be a real revelation, not whether it be attended with every circumstance which we should have looked for ; and concerning the authority of Scripture, whether it be what it claims to be : not whether it be a book of such sort and so promulgated as weak men are apt to fancy a book containing a divine Revelation should.”—*Butler’s Analogy*, Part II., chap. 3.

Now these words of the great defender of revealed religion seem to me to be worthy of our profound attention. It is sufficient for my purpose if this passage simply stands in opposition to these strong statements of Mr. Gosse’s. Mr. Gosse says in the 13th paragraph of his paper, speaking of himself :—

“Yet having accepted, *on other grounds*, the fact of revelation, and that the Pentateuch is an integral part of the divinely-inspired Word, I come, *assuming* that being of God, it is true ; I will yield one iota of it only when absolutely compelled to do so. I require the objector to give absolute proof of the *non*.”

Of course it is very well for a man in Mr. Gosse's position to say that ; but suppose I proposed to the Hindoo whom we had here a short time since, as a *sine quâ non* of believing in Christianity, that he must believe in every historical difficulty in the Old Testament, I am sure, as Dr. Miller said, on a recent occasion, that it would be both unchristian and entirely unwarrantable to pursue that course. That is what I feel so strongly to be the danger of this paper. Although Mr. Gosse's paper is written upon the Exodus, Dr. Thornton's paper does not deal with the Exodus largely, or even chiefly—in only one case does he deal with it. I never understood Dr. Thornton as pinning himself to the truth of any one individual statement which he made in his paper, but as simply pointing out that there are several historical difficulties in point of numbers in the Old Testament, and putting them all together he comes to this point, that we must admit that error of some kind has got into the sacred text. The Christian Church has to deal with a very large unbelieving world, and we must consider the way in which we are to deal with infidels. How are we to deal with them? Not by putting forth difficulties in our fore-front as necessary to be accepted before a man can accept revelation. Surely that is not the course which our Lord and His Apostles pursued. That is why I feel the dangerous nature of this paper, and there are several other points in it on which I feel considerable difficulty. For example, both the papers before us assume the shorter chronology of the time during which the Israelites were in Egypt, but Professor Rawlinson asserts the contrary. Here is a point on which learned men hold diverse opinions, and we cannot come to a strong conclusion upon it ; but Mr. Moule's paper does contain an ambiguity which I do not think he meant to imply, for he says, in his 28th paragraph :—

“Now, the use of Hebrew letters on the Maccabean coins is a fact. But their use in the original manuscripts of the Old Testament is not by any means an established fact. On the contrary, the oldest Hebrew manuscripts known invariably express numbers in words.”

Supposing I did not know to the contrary, if I had read that passage, the impression made on my mind would have been that we have manuscripts in existence which are as old as the time of the Maccabees.

MR. MOULE.—That is not so.

MR. ROW.—I believe the oldest Hebrew manuscript does not exceed eight centuries in age.

MR. MOULE.—Yes, but it does not maintain your assertion. We have no proof whatever of the Maccabean letters being used earlier than that period.

Mr. Row.—Well, Professor Rawlinson is against you.

Mr. MOULE.—And Dr. Birch is against the view that there is proof.

Mr. Row.—Well, no proof can be hoped for, because we have none of the early original manuscripts. But all I contend for is this, that if these numbers present great difficulties to us as believers, when an unbeliever says to me that he cannot accept them, I am justified in saying that numbers are very liable to mistakes and corruption. The question really before us is how we are to act with persons who reject Christianity with respect to a great number of these difficulties, for it is not a case of one or two, but of several of these exceedingly high numbers. Take the thousand men said to have been destroyed by Samson with the jawbone of an ass—this is a large number for any one man to have destroyed.* In one part of Mr. Gosse's paper he lays down the necessity of believing in an indefinite multiplication of miracles beyond those recorded in the Bible, and there are several paragraphs where he thus entirely misapprehends the position of those who differ from him. I am sure we shall all agree that we must not be too ready to ascribe miracles to Almighty God when there is no sufficient occasion for them (hear, hear),—not because we wish to limit the power of God, but because we do not think it was His will to work them. We do not deny that He could have worked all these miracles had He so chosen, but we say we have no adequate reason for believing that He would have worked them. (Hear, hear.) Every writer on Christian evidence lays it down that the moral circumstances of the case largely modify the evidence on which we believe a miracle. If any one presents me with the miracles of the apocryphal books of the New Testament, I should at once reject them, without any inquiry, on account of their unworthy character, without any evidence, or in despite of any evidence that might be adduced. So I act with respect to the alleged miracles of spiritualism. They are unworthy of Almighty God, and derogatory to His moral nature. What I strongly urge is, that we venture on most dangerous grounds in asserting an indefinite multiplication of miracles where

* That Samson's strength was immense all his actions against his enemies attest; e.g. the cords that bound him were found to be "as flax burnt with fire," &c. Again, it is rather on the person using the weapon than on the weapon itself that the effect of its use depends: how long it took Samson to kill the Philistines we know not, but it is intimated that his strength was specially given to him for the occasion, and therefore *miraculous*. Reference to the Sacred text shows that there was necessarily a miraculous element in Samson's life, for it was ordained that he should "begin the deliverance of Israel," at a remarkable period in their history. That Samson's exploit on this occasion made no ordinary impression, may be gathered from the following:—Josephus, writing 1800 years ago, describes his acts, and says the place "is now called the Jawbone, on account of the great action there performed by Samson, though of old" (this is, anterior to Samson's calling it Ramath-lehi) "it had no particular name." Recent travellers have found that it still retains the name.—ED.

the Scriptures do not assert that they have been wrought. If miracles were thus rendered common and ordinary, they would cease to have all their essential value. I understand by a miracle an act of God out of the ordinary course of nature, wrought in attestation of a revelation. But if Almighty God is constantly interfering with the laws of nature on trifling occasions, how am I to know when a miracle attests a revelation? It is on this ground that I think it is a dangerous position to assume the existence of multitudes of miracles which are not recorded in the Bible for the mere purpose of helping us over Scripture difficulties.

MR. MOULE.—Dr. Thornton places the numbers at the Exodus as the most difficult question to deal with. Let me read what he says in his 12th paragraph :—

“But we now arrive at a number which has been a difficulty and an offence to many, and is, so to speak, the very basis of the operations of Dr. Colenso and his followers against the authenticity of the Old Testament, —I mean the number of the Israelites who passed the Red Sea into the desert of Sinai.”

But in his letter just now read I am glad to see that Dr. Thornton retracts the view put forward in his paper, and says it was a hasty statement. There, however, it stands as the basis of the operation; and when I began to write my paper I felt that if I could show that his principles would not apply to that, his system would be upset.

MR. GRAHAM.—I had some idea of not taking any part in this discussion, because after Dr. Thornton's paper came out, I felt that the positions which he took up in it were untenable, and I stated so to our then Honorary Secretary, the late esteemed Mr. Reddie, who asked me to put my views on paper and send them to him. I did so, and he sent them on to Dr. Thornton, and they appear in page 141 of the present volume of the *Journal of Transactions*. I therefore thought it was almost superfluous for me to enter into this discussion now; but at all events I shall endeavour not to repeat myself in what I now say. I think the subject assumes an altogether new character on account of the concessions which Dr. Thornton has made. (Hear, hear.) He states that what Mr. Gosse has written (and he has been pleased to allude to what I have written also) has modified his views. I would not for one moment connect Dr. Thornton with Dr. Colenso, for I regard his views as orthodox, probably just as orthodox as those of any of ourselves; and I do not for one moment impugn his motives or the objects of his paper on the numerical system of the Old Testament. I think it is exceedingly creditable to him that the reasoning of the two papers now before us should have modified his views. If I understand his concessions rightly, he wholly gives up certain positions which he had previously taken in his paper. I must disagree with Mr. Row in his view that the point relating to the 600,000 Israelites who came out of Egypt under Moses was not the most important part of Dr. Thornton's paper, for I take it that that is really the great subject that runs through the whole paper, and it certainly struck me, when it appeared, that it was the thing which was most objectionable; and

in order to enable me to overthrow it, I went through the greater portion of the Pentateuch, and elaborated my own argument, which I put into the most condensed form I could. At the same time there fell under my notice five lectures by Professor Harold Browne, delivered in the University of Cambridge in reply to Dr. Colenso, and I was extremely pleased to find that Professor Harold Browne, who is now Bishop of Ely, took exactly the view that I take, and which Mr. Gosse and Mr. Moule have also taken and brought forward subsequently. With regard to the question of inspiration, it is very important that we should thoroughly hold the inspiration of the original documents. Uncorrupted preservation is one thing on which Professor Harold Browne speaks wisely, but uncorrupted preservation is not inspiration. For many of the numbers in the Pentateuch I do not contend, but I believe that though some of them may have become more or less corrupted, we can correct many of the discrepancies. For instance, I take, just as an illustration, that reference of Dr. Thornton's to the Second Book of Chronicles and the Second Book of Kings. Now what is the simple matter of fact? If you correct the Book of Chronicles by the Second Book of Kings, and if you take the Second Book of Kings as correct, the difficulty entirely disappears—the one text corrects the other. Then take the number of men smitten at Bethshemesh. Mr. Moule has dealt very ably with that point, and what he conceives to be the case, taken on the authority of Glassius, entirely sets aside the difficulty. I take the Hebrew from Genesis, in the case of Abraham's intercession on behalf of Sodom:—
 אולי חסרון המשים הצדיקים חמשה That, literally rendered, is, "peradventure there lack fifty the righteous five." Now that, I submit, is nonsense; but then we have the fact that the preposition **כ** is sometimes omitted from the larger number. Apply that to the text relating to Bethshemesh. Suppose the **כ** to be understood before the larger number, the difficulty disappears, and you have 70 destroyed out of 50,000 men who were gathered round the ark. Mr. Moule has brought that out with great clearness on the authority of Glassius.

MR. MOULE.—Glassius does not criticise the passage about Bethshemesh—he merely gives the rule in his grammar that **כ** is frequently omitted.

MR. GRAHAM.—Then it is still more creditable to the scholarship of Mr. Moule that he should apply it in this case. (Hear, hear.) But let me say with regard to the 600,000 men, that I firmly believe that the credibility of the Pentateuch depends as much on the number 600,000 men leaving Egypt under Moses as it does on any other fact stated in it. Though it is a very high number, it is a grand fact which runs through the whole history, and it is the subject of prophecy. God tells Jacob not to be afraid of going down into Egypt, for He will there make of him a great nation. The same promise had also been made to Abraham, and then I see that Pharaoh became afraid of the nation—they multiplied to such an extent—and cast out their young children, to the end that they might not live. Pharaoh says, "They be mightier than we"; and then again when they have come into the wilderness they are numbered at the end of the year, and they have 603,550 men

fit for war. Of those men fit for war, of twenty years of age and upwards, each man pays half a shekel for the building of the sanctuary. Now compare the amount of the precious metals used in the erection of the sanctuary and you have a quantity which tallies with half a shekel from each of 603,550 men. Then the people were numbered again at the close of the stay in the desert, and there were 601,730 men, the tribe of Levi in both cases being excluded. You have not only the census given to you *en masse*, but the details of the various tribes are given, and the sums, when compared together, tally in every respect. Then after the people come out of Egypt they meet Amalek, who was a very powerful foe, and defeat him. They discomfited him with the edge of the sword in a pitched battle, he wishing to obstruct their way in the direction of Mount Sinai. By-and-by they vanquish Midian, and take a vast amount of spoil. Balak, king of Moab, becomes afraid of their numbers and sends to Balaam at the Euphrates to come and curse them; but when he comes, he comes directed by the Lord to bless. In all this you have perfect harmony. Take the language used in reference to the basket of first-fruits which the Israelite is to offer as a thank-offering for the deliverance out of Egypt. He is directed to say, "A Syrian ready to perish was my father, and he went down into Egypt and sojourned there with a few, and became there a nation, great, mighty, and populous." Look at the accumulation of epithets. Can any one suppose that that refers to 600 or 6,000, or any such number? When it is looked narrowly into, the thing will not stand criticism for one moment. I come now to the conflicts with Sihon, king of the Amorites, and Og, king of Bashan. The latter possessed sixty strong cities fenced with walls, gates, and bars, and these cities, with the territories of both kings, were taken and distributed among two tribes and a half. Out of these, 40,000 men crossed the Jordan under Joshua, and went up with the main body to Jericho, which they took. They afterwards took Ai, 12,000 being sent to take it and 30,000 to lie in ambush. Then the Hivites, who had four great cities, were frightened, and made a league with Israel, and all the men of the south made war against the Hivites; and then you have the marvellous battle of Beth-Horon, when the sun and moon stood still, and God sent down a terrible hail and destroyed the enemies of Israel. All the south of the land was taken, and Joshua, leading his men northward up to the waters of Merom thirty-one kings were destroyed and their territories were taken and possessed on the west of the Jordan, and two great territories were taken on the east. Now how can any one say that the numbers of the Israelites at the exodus were so small, considering what the men were? They were slaves escaping from bondage, and not trained to arms, nevertheless they occupied these countries and destroyed these kings and peoples, who, there can be no question, were most warlike. I look in the New Testament, and I find in the 10th chapter of the 1st Epistle to the Corinthians, that in the matter of Baal-peor 23,000 fell by the judgment of God. But how out of 600 or 6,000 could they fall in a day? The question arises, is that a genuine text in the New Testament? Yes, it is admitted to be genuine by all the critical

authorities. There is a little discrepancy in the figures 24,000 being mentioned in the Old Testament instead of 23,000 ; but there are two ways of accounting for it. Mr. Gosse says that St. Paul takes the minimum number, and that probably the exact number lies between the two sets of figures ; but another way of accounting for the difference is by assuming that 1,000 were destroyed by the judges, and if you add that 1,000 to the number that fell by the pestilence, there is no discrepancy whatever. I am persuaded that there are errors of defective transcription in the Scriptures ; but for such men as Mr. Row, with so much critical acumen, and Dr. Thornton, with so much learning, and the rest of us following in the wake of those superior men, it is a very beautiful thing to try and correct them, and to get hold of the true meaning which the original text bore. But it is a perilous thing for us to attack the numbers of the Pentateuch and of the historical books of the Old Testament, and pronounce them corrupted. I think it is not what we should do, remembering the words of Milton, which contain a very important lesson :—

“ What boots it, at one gate to make defence,
And at another to let in the foe ? ” (Cheers.)

We are letting in the foe while we are professing to defend the divine Book.

Mr. Row.—I wish to make an explanation with regard to Dr. Thornton's paper. I have counted the number of pages in that paper, and there are nine which deal with questions quite distinct from the exodus, and only three on the exodus itself. Now that is a very strong point.

Mr. GRAHAM.—But the credibility of the Pentateuch depends on the number of men who came out of Egypt under Moses.

Mr. T. W. MASTERMAN.—I think the matter would be very much simplified if we applied a three-fold division to the numerical difficulties in the Old Testament. We have a great many numbers concerning which there have been difficulties, but which are recorded only once, and therefore, if they are not right, we have only to correct one text or part of a chapter. Then we have other numbers which are mentioned once, but which are referred to afterwards in different terms from the way in which they were given the first time. In those cases there is a discrepancy between the quotation and the original, and therefore there must be some error, for they cannot both be correct. But the numbers principally referred to in Dr. Thornton's paper stand on a very different footing, especially those relating to the exodus of the Israelites from Egypt, which form the great point both of Mr. Gosse's and of Mr. Moule's papers. Those numbers are quoted several times in the sacred text. They are analyzed, cut into pieces, their sum total added together, and that sum total coincides with the figures as given in detail. Therefore they stand in a very different position from such a number as the thousand men destroyed by the jawbone of an ass. If the thousand men destroyed by Samson is simply a general statement that he destroyed many people, we have only to correct that one text, and acknowledge that it merely meant a great many, and the matter is done with ; but as to the

number of the children of Israel coming out of Egypt, we must accept it, or else we must strike out not one, but many statements, one after the other.

Mr. MOULE.—About sixty.

Mr. MASTERMAN.—We must certainly correct the Old Testament chapter after chapter, and the different tables of numbers altogether, so that the total may coincide with our ideas of what should be right, and not with what we find written. Therefore this number and many others stand on a different footing from those which are only mentioned once. I hope I am quite conveying my meaning to the meeting. (Hear, hear.) Now I wish to say here that I agree in a great measure with Mr. Gosse's paper. Of course no one here would ever care to sign his name to every word that Mr. Gosse has written in that paper; for in writing a paper of this nature there must occur almost of necessity some passages which would require amendment. But Mr. Gosse strongly asserts that if we begin to destroy the authenticity of the numbers of the Old Testament, we may just as well cut into the whole history, and alter any part which is not consistent with our ideas, or which we do not regard as likely to have occurred, or which may not suit the idiosyncrasies of our own disposition or of our own critical power. I think that if we alter such numbers as those relating to the children of Israel, acknowledged as they are to be a most important part of the teaching of the Old Testament, we may just as well alter the whole text. That is my feeling as to Mr. Gosse's statements. Let me make one more observation. I see that Mr. Row does not think that the 600,000 men were lineal descendants of Jacob.

Mr. Row.—Dr. Payne Smith says that—not I.

Mr. MASTERMAN.—Well, I think we may allow that there were some who were adopted into the family of Jacob, and who received the rite of circumcision. But they must have been very few. The great mass of the children of Israel who went out of Egypt and through the wilderness into Palestine, are always spoken of as the children of Israel, and therefore they must have been the descendants of Jacob. Both Mr. Gosse and Mr. Graham have strongly put before us that there is no impossibility in the 600,000 men being descended from Jacob and his sons.

Mr. GRAHAM.—Dr. Thornton fully admits that; and it should be well understood that he admits that that is not an impossible increase. All that has been said on that subject does not touch Dr. Thornton at all. He does not exactly give that increase, but he admits, not only that it was possible, but he even goes further, and says that Israel in Egypt was exceptionally blessed with increase. Dr. Thornton says it is possible, but he thinks it is not probable.

Mr. MASTERMAN.—Then I stand corrected. I was only saying that I do not think we have any reason to imagine that these 600,000 men were not lineal descendants from Jacob and his family; and especially when you refer to the Old Testament you will see that when Jacob came into Egypt, he came with his sons and his sons' wives and his grandchildren. Moreover a few asses sufficient to carry food for the whole party, and the total

number of seventy is mentioned.* It is never said that he had a great number of followers. If we remember that Pharaoh promised to Joseph that there should be land apportioned to his father and brethren, and their descendants, is it likely that Pharaoh would have handed over a large portion of land to thousands of followers and retainers, especially when the Scriptures say expressly that those who came into Egypt were Jacob and his family? However, there are scholars present who can go more deeply into these matters than I can, and therefore I will content myself with expressing my conviction, from a study of the Scriptural books, that the children of Israel must be taken to be the descendants of Jacob and his family, with a very few if any exceptions. It is very important that this should be so when we view the whole history of the children of Israel, and consider the promises that were made to them. If we admit that thousands of that number were retainers and camp-followers, then I cannot see how the promises of God to the children of Israel, as a distinct family descended from the loins of Jacob, can be fulfilled.

REV. J. JAMES.—I have read Dr. Thornton's paper with very great interest, and I have also been much pleased with the two papers which are now before us, and which maintain the possible correctness of the numbers of the Exodus as given to us in the Old Testament. I confess to still retaining the opinion I avowed when Dr. Thornton's paper was first read—a certain satisfaction in standing clear of vast numbers, errors in which may have arisen out of some misapplication of some sign or dot or letter in the earliest manuscripts. I could the more readily follow the arguments of Mr. Graham and others if I could see that instead of 600,000 it was 60,000 which they lean to; and hope that it may be found at some future time that those notations found on coins in the time of the Maccabees, and those letters which were then in use, may have existed also in the earliest Hebrew manuscripts, and may account for the mistake of 600,000 for 60,000. This is all that is required; for any less number than 60,000 would hardly justify us in thinking that the armies of Amalek and others would have been so readily overcome by Israel without practice in war, remembering that their adversaries were well-practised warriors. Any less number than 60,000 would be certainly preposterous. When Dr. Thornton's paper was read, a friend of mine hit the nail on the head when he protested against so small a number as 600, and maintained that Dr. Thornton's theory on that point went entirely away from his argument. I thank you for allowing me to say this much; but I should also be glad to add that, if any scholars anywhere existing could trace out some earlier Hebrew or Chaldee manuscripts than have yet been found, it would be of great benefit to mankind. Meanwhile I confess I am unable to believe in the infallibility of the numbers in our present version (albeit in the Hebrew every number is written at full length in words, and there is no such thing as attempting to give them by letters, ciphers, dots, or other

* All the souls of the house of Jacob which came into Egypt were three score and ten.—Gen. xlv. 27.

signs); especially as I find that, in the earliest numbers mentioned in the Bible—those relating to the ages of the antediluvian and post-diluvian patriarchs—there is a difference of 1,300 years (that is of 100 years for no less than thirteen several generations) between the Hebrew and the Septuagint translation as to the ages of as many patriarchs at the birth of their several sons. Now I cannot but think that the Septuagint version must have had some other manuscript of the original Hebrew than that which we now have, from which these additional numbers were taken; and that the additional notation was derived from letters or other signs. This would fully account for the discrepancies, when there are any. I thank Mr. Gosse and Mr. Moule for their remarks on the subject of Bethshemesh. I think Mr. Graham's explanation is perfectly satisfactory. He has out of Glassius's dictionary got the fact that the m is sometimes omitted, and that makes the passage perfectly clear.

MR. C. GODFREY.—There has been a great deal of talk about ciphers, which would lead us to believe that the Hebrews used the Arabic and Hindoo ciphers. It is certain that if you added an 0 to 60,000 it would become 600,000 in the Arabic and Hindoo notation; but the ancient Hebrews, so far as we know, had a system resembling the Roman system, in which each individual figure had its own particular value wherever it might be placed, a certain figure representing 1, and another representing 10, without any connection with the surrounding figures, or any regard to relative position. It is, therefore, a great fallacy to suppose that any greater difference could be brought about by a mere change in the position of the Hebrew letters than could be brought about by any change in the position of the Roman letters. Such a change could only be brought about by the use of the Arabic numerals, which it is perfectly certain were not used by the ancient Hebrews.

DR. A. J. FRASER.—I should like to say a few words on this subject. Mr. Moule is here himself, and we have able exponents of Mr. Gosse's views who have favoured us with much that is encouraging. There are, however, some here who being neither learned scholars nor scientific men, come to listen rather than to speak. This is the rôle which I generally assign to myself; but we are now dealing, not with matters of mere literary or scientific interest, but with subjects of far greater importance and involving much deeper issues. It is on that account I rise to thank Mr. Gosse and Mr. Moule for replies to criticism which seems to me calculated, indirectly at least, to disturb our trust in our Bible. Agreeing in the main with Mr. Gosse, I regret that he should have classed Dr. Thornton with Dr. Colenso, and I trust he will withdraw this expression; but with regard to the efforts made to strengthen and not to weaken our trust in the accepted biblical renderings, I think I express a prevalent feeling in saying that we are under great obligations to Mr. Moule and Mr. Gosse; they, as well as Mr. Graham and others, have greatly helped many of us, and I am sure the Institute will join with me in giving our warmest thanks to them for bringing their learning, their research, and labour to strengthen our confidence in the correctness of those numbers which seemed at first impugned by Dr. Thornton. I am sure Dr. Thornton did not

wish to write anything that would have a disturbing effect upon weaker minds than my own, for I am convinced that he wrote not with the view of pulling down, but of building up; still there was a feeling created, which I think found expression in the room when his paper was read, that he had “unsettled a great deal and settled very little,” and some of us felt much as a small detachment of an army feels which, cautiously advancing to meet a *known foe* in front, suddenly finds a *supposed friend* attacking them in flank. We are, therefore, grateful to have something added to the defence of the points thus assailed. Much that is valuable has also fallen from Mr. Row, and I am sure we are glad to have heard the whole matter well discussed.

Mr. Row.—I have not touched the numbers of the Exodus at all.

The CHAIRMAN.—I cannot avoid feeling myself that the numbers mentioned in the Exodus are so essentially mixed up with the whole tenor of the dispensation of the Old Testament, that they stand upon a very different basis from other numbers. Isolated facts, not in any way mixed up with the general tenor of the Old Testament dispensation, such as the number of men slain by Samson, and the number who perished at Bethshemesh—the latter of which has been most ably explained by Mr. Moule—whether right or wrong, are isolated facts, not mixed up with the tenor and details of the Old Testament dispensation in the same manner as are the numbers of the Exodus. He who would omit one cipher puts us in this difficulty, that his number does not fit the amount of silver in the tribute, and does not fit the aggregate enumeration of the separate tribes. Now, these are two important points, both of which, as cumulative evidence, bear on the stated number of the 600,000 men; and if we drop a cipher, we place ourselves in a difficulty in regard to those two points of collateral evidence.

Mr. JAMES.—I allow myself to be beaten on that point. I threw it out only as a suggestion.

Captain F. PETRIE.—There are one or two matters which have struck me during the discussion. In the first place, the numbers which have been referred to by Dr. Thornton may be classed under two heads: under the first I would put those which have been so much discussed this evening, and in regard to which Dr. Thornton in his correspondence has to some extent not only given up the position he originally took, but adds, that if it can be satisfactorily proved to him that he is wrong, he will give up everything he has advanced in his paper against their credibility. Under the second head I would put such as are evidently not intended for literal acceptance. For instance, in the First Book of Samuel, we are told that David, after he slew the giant, was brought before Saul, and afterwards:—

“It came to pass . . . when David was returned from the slaughter of the Philistine, that the women came out of all cities of Israel singing. . . . And the women answered one another as they played, and said, Saul hath slain his thousands and David his ten thousands.”

Now that was merely a form of expression, and not a distinct statement of fact. As to one point mentioned by Mr. Graham—the number of the

Israelites who invaded the country of the Moabites—the Rev. J. L. Porter has written a very interesting work describing his travels and discoveries in that land. The truth of the Scripture narrative is entirely borne out in every page of it. I am happy to say that an expedition to the country of the Moabites is now being fitted out : it must necessarily be a large one, for the country is very dangerous to travel in. There can be no doubt that the results of a careful survey thereof will throw a great deal more light on this portion of the history of Israel than we have at present.

MR. MOULE.—With reference to the remarks of Mr. Row, I may say that I do not think he ought to suppose that, because I have not mentioned Dr. Payne Smith and Professor Rawlinson, I am therefore unacquainted with their writings : Mr. Row seems to have taken it for granted, I think, that neither Mr. Gosse nor myself have read the Bampton Lectures. Neither is it to be supposed, because one is not much before the public in reference to unbelievers, that one has had no such experience.

MR. ROW.—I alluded to Mr. Gosse.

MR. MOULE.—From my youth I have felt these difficulties myself ; and have had to fight every inch of my way. I am therefore rather an impartial witness, and one who would be ready to bear with others. From the time my eyes were opened to the infinite importance of this subject I have fought every inch of my way through this difficult Book, and now my way is clear as the light of the sun. I have held discussions with some of the most accomplished unbelievers, and I never had a quarrel with one of them, nor did any ever hear me say a harsh or unkind word towards them. My next objection to Mr. Row's mode of dealing with this subject is, that he so strongly insists on submission to the published opinions of others. Why should I submit to the opinions of the Dean of Canterbury or of Professor Rawlinson, if unsupported by argument fairly refuting mine ? And as to the works of Paley and Butler, my study of them at Cambridge fifty years ago enables me to affirm with confidence that there is not in the works of either of them a single passage applying to the argument in my paper.

MR. ROW.—I selected the passages in reference to Mr. Gosse's paper.

MR. MOULE.—Well, let me briefly state the entire drift of my paper, that it may be judged how far my argument is affected by Mr. Row's remarks. It is true that the direct object of my attack was Dr. Thornton's statement respecting the numbers of the Israelites at the Exodus and in the Desert. But at the same time I aimed (and, I think, successfully) at exposing the unjustifiable and the dangerous style of interpretation on which the so-called exaggeration of numbers, especially in the writings of Moses, commonly rests. And I wish it to be distinctly understood that my paper is intended to be a refutation, not only of certain of the opinions set forth in Dr. Thornton's paper, but of others expressed by some of those who took a part in the discussion on that paper. Let me give you the passage in Dr. Thornton's paper, which first arrested my attention. It is as follows :—

“The words translated ‘six hundred thousand’ might, *by a little straining*, be rendered one thousand six hundred.”

But what have we to do with "a little straining"? (Cheers.)

"This number of adult males would imply a total population of about 6,000—a *manageable number*. But I must frankly avow my belief that the word thousand, *eleph*, is an insertion."

And is this to be so in sixty different cases? Has there been a casual insertion of the word "*eleph*" in sixty different passages? Yet this opinion, such as it is, we find in the subsequent discussion on the paper supported by the following remark, made, I believe, by Mr. Row :—

"I think I take a safe ground in supposing that these numbers might probably have been merely transposed out of other then existing books, out of which the confusion has originated; those previously existing books having been composed, not from authentic documents or careful comparison of numbers, which we know is very difficult, but from general or popular belief."

Now against two such conjectures I have in my paper simply set the two censuses of the twelve tribes so carefully taken under Divine direction by Moses and Aaron, and the fact that every man who was numbered had to give his half-shekel; and the additional fact that in the account given of the silver of these half-shekels in the construction of the Tabernacle the figures exactly tally. In doing so I claim to have proved the error of both opinions; and I now assert that neither on the former occasion nor the present has Mr. Row given any just reply to my argument. In turning now to the passage in which the smiting of the men of Bethshemesh is recorded, I may, perhaps, be allowed first to state that a few days ago I lighted on another instance of the omission of the preposition *from*—*from* or *out of*. It is in Joshua iii. 13,—“The waters of Jordan shall be cut off *from* the waters that come down from above.” The translators of the authorized version have noted this omission in the usual way by printing the word *from* in italics. To one of my remarks on Dr. Thornton’s version of the words in 1 Sam. vi. 19, there is in the printed paper which I hold in my hand a professed reply. In his paper he had said, as an introduction to this version,—“I think I shall be pardoned if I suggest that in the *old Hebrew* character the symbols of ‘out of a thousand’ and ‘fifty thousand’ might be most easily mistaken for one another.” My remark on these words was this :—“Now let the *symbols* for ‘out of a thousand’ and for ‘fifty thousand’ in the *old Hebrew* character be produced, that the facility with which one might be mistaken for the other may be seen. I cannot myself regard the suggestion to be *pardonable* without this.” It is evidently to these words that reference is made by Dr. Thornton, in the following passage : “The following remark applies to the Rev. H. Moule’s paper, ‘Israel in Egypt.’ The following are the *old Hebrew* letters to which I referred.” The letters are then given. Here, however, there is no *symbol* either for *fifty thousand* or for “out of a thousand” (whatever that might be). And even if there had been, there would still have remained that insuperable difficulty in the way of

these fanciful emendations of Hebrew numbers—a difficulty so strangely overlooked by Dr. Thornton—*the concord of Hebrew numerals*. I would venture to affirm my full conviction that a closer investigation of the Hebrew text, combined with a fairer and more reverential study of the Divine Revelation contained in it than has hitherto been made by either German or English commentators, will not only establish the fact that, in the early copies of the Hebrew Scriptures, numeral letters or symbols for numbers were never employed, but will scatter all conjectural emendations to the winds. My complaint against modern commentators and essayists is this,—that in the place of such investigation and such study, there is a servile submission to the dictum of some German. There is a general neglect among both clergy and laity of a thorough searching of the Scriptures, just as amongst geologists there is a want of deep and extensive investigation of the strata of the earth. (Cheers.) The day has yet to come, but I trust it will soon come, when by large numbers of the learned men in our universities and colleges, the Scriptures, both of the Old Testament and of the New, will be carefully studied, as the Word of God; when they shall be diligently searched from end to end, and so by appointed means of comparing Scripture with Scripture, the truth be not barely conjectured, but found and believed. I thank you for allowing these few words in connection with my paper, which I am glad to find has met with the approval of one or two of our best lawyers and of several of our best divines.

MR. GRAHAM.—I would mention one fact which has not yet been noticed, it is that in the Septuagint, the translation made about three hundred years before the time of our Blessed Lord, we find numbers expressed in words, not by numerical letters.

MR. R. W. DIBDIN.—Several speakers have referred to the acts of Samson, and his killing a thousand people with the jawbone of an ass, and one or two seem to think that that statement cannot be borne out by the facts as they probably occurred. Mr. Row said we must not fall back on miracles for an explanation, but he did not deny that most of that story, if true, must be miraculous. Samson must not be considered as an ordinary man—any one who could carry the gates of Gaza to the top of a hill could do more in slaying Philistines than any ordinary man could do,* and when it is stated in the Scriptures it has a large claim upon our belief. We know that the event made a great sensation among the Philistines, which it scarcely would have done if there had been only two or three of the Philistines slain. The narrative seems to show, apart from the fact that the number 1,000 is mentioned, that there must have been a considerable number killed, and I do not think we are justified in saying that it was not so.

* Josephus refers to this; Kitto found that “the place of the gate” is still shown, though the former city has been destroyed; Porter also, in his “Giant Cities,” mentions he found that the inhabitants show the hill—which from its position he considered must have been the one up which the gates were carried—and had a tradition that Samson, a giant, came to Ghuzzeh (Gaza), and “took the gates of the infidels” to the top of it.—ED.

Mr. A. V. NEWTON.—Five or six might not be able to run away, but a thousand would.

Mr. DIBDIN.—But a thousand would not be all the men who were there at the time—there would be many more than a thousand. Then there is the story of the foxes* and the story of the gates of Gaza. Almost all Samson's doings are represented as extraordinary and miraculous. He was raised up for a special purpose, and was endowed with special powers to enable him to accomplish it.

The Meeting, the last of the session, then terminated.

* Boothroyd, Kitto, and other authorities, state that the Jackal is the animal whose name has been thus rendered in the translation.—ED.



APPENDIX (A).



LIST OF THE
VICE-PATRONS, MEMBERS, & ASSOCIATES
OF
The Victoria Institute,
OR
Philosophical Society of Great Britain.

Revised in accordance with the resolution—to amalgamate the 1st Class Associates with the Members,—adopted at a Special General Meeting, held December 4th, 1871.

CORRECTED TO DECEMBER 31, 1871.

OFFICES :

8, ADELPHI TERRACE, STRAND, LONDON, W.C.

OFFICERS AND COUNCIL FOR 1871-72.

President.

THE RIGHT HON. THE EARL OF SHAFTESBURY, K.G.

Vice-Presidents.

PHILIP HENRY GOSSE, ESQ., F.R.S.

REV. WALTER MITCHELL, M.A.

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REV. ROBINSON THORNTON, D.D.

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B. BOND CABELL, ESQ., M.A., F.R.S., &c. &c.

A. McARTHUR, ESQ., F.R.G.S.

SAMUEL MORLEY, ESQ., M.P.

H. W. PEEK, ESQ., M.P., J.P.

* * * The Qualification of a Vice-Patron is a Contribution of not less than Sixty Guineas to the Funds of the Institute.

The Members and Associates included in the original Foundation List, closed December 31, 1866, are distinguished by an *£*; the dates of election are prefixed to the names of those since elected.

M E M B E R S.

(*Members of Council* *. *Life Members* †.)

¶ *Distinguishes those who have contributed Papers to the Institute.*

A.

1869.

Jan. 18. Allen, G. W. Esq. Solicitor, *Sydney, New South Wales* (83, *Coleman Street, E.C.*).

1869.

May 3. Allen, W. Shepherd, Esq. M.P. *Reform Club, S.W.*

£ Andrews, T. R. Esq. *Cleveland House, Wimbledon Park, S.W.*

£ Armytage, Rev. J. N. Green, M.A. Cantab. *Clifton, Bristol.*

£ Arthur, Rev. William, M.A. Wesleyan Mission House, 17, *Bishopsgate Street Within, E.C.*

£ Aston, Rev. John A., M.A. 6, *Paragon Buildings, Cheltenham.*

£ Auriol, Rev. Edward, M.A. Prebendary of St. Paul's, Rector of St. Dunstan's in the West, 35, *Mecklenburg Square, W.C.*

B.

1868.

May 4. Badenoch, Rev. George Roy, Memb. Gen. Council
Glasgow Univ. 1, *Whitehall Gardens, S.W.*

1869.

Nov. 15. Bagster, H. Theodore, Esq. 10, *Down Street*; and *Junior
Athenæum Club, Piccadilly, W.*

1868.

June 15. Balmain, W. H. Esq. *St. Helen's, Lancashire.*

1869.

Feb. 15. Barker, John L. Esq. *Homehill, Bowdon.*

⚡ Barker, Rev. Matthias, M.A. *Warden Lodge, Cheshunt.*

⚡ † Barrington, William, Esq. C.E. *Barrington Street,
Limerick*; and *Ballywilliam Cottage, Rathkeale.*

⚡ Barter, The Hon. Charles, B.C.L. Oxon. (Memb. of
Legislative Council of Natal), *The Start, Pieter-
maritzburg, Natal.*

⚡ Bathurst, Rev. W. H., M.A. *Lydney Park, Gloucester-
shire.*

⚡ *† BAXTER, ROBERT, Esq. Solicitor, 10, *Queen Square,
Westminster, S.W.* (TRUSTEE and VICE-PATRON.)

1871.

June 19. Bayford, A. F. Esq. LL.D. Senior Registrar of the Court
of Probate, Chancellor of the Diocese of Manchester,
38, *Hamilton Terrace, St. John's Wood, N.W.*

⚡ Beaufort, Rev. D. A., M.A.

⚡ Blackwood, Rev. J. Stevenson, D.D. LL.D. *Middleton
Tyas, Richmond, Yorkshire.*

1867.

Nov. 25. *Bleby, Henry W. Esq. B.A. Lond. Solicitor, 48
Isledon Road, Holloway, N.

Blomefield, Rev. *Sir* T. Eardley Wilmot, *Bart.* M.A.
Cantab. *Incumbent of All Saints', Pontefract,*
Yorkshire.

Boyce, Rev. W. B., F.R.G.S. 3, *Angel Terrace,*
Brixton, S.W.

Braithwaite, Charles Lloyd, Esq. Manufacturer, *Kendal,*
Westmoreland.

† Braithwaite, Isaac, Esq. F.R.G.S. Assoc. I.N.A. 4,
Gloucester Square, Hyde Park, W.

1871.

June 19. Brightwen, G. Esq. 8, *Finch Lane, London.*

1867.

Nov. 18. *†¶ Brooke, Charles, Esq. M.A. Cantab. F.R.S.
F.R.C.S. Pres. Meteor. Soc. V.P.R.M.S. and Surgeon
to the Westminster Hospital, 16, *Fitzroy Square, W.*
(VICE-PRESIDENT.)

1867.

Feb. 18. Browell, W. F. Esq. *Broadlands, Tunbridge Wells.*

Brown, Robert, Esq. Solicitor and Registrar of County
Court, *Barton-on-Humber.*

1869.

Jan. 18. Budgett, James S. Esq. *Ealing Park, Middlesex.*

Budgett, W. H. Esq. Merchant, *Redland House,*
Bristol.

Butler, Henry, Esq. H. M. Civ. Ser. *Beasley House,*
Blackheath, S.E.

C.

- Ɔ** † CABELL, BENJAMIN BOND, Esq. M.A. F.R.S.
 V.P.R.I. F.R.S.L. M.R.A.S. V.P.Z.S. F.R.H.S.
 F.R.G.S. Bencher of the Middle Temple, J.P. and
 D.L. for Middlesex, &c. &c. 1, *Brick Court, Tem-
 ple*; and 52, *Portland Place, W.* (VICE-PATRON.)
 1871.
Feb. 6. Cadman, Rev. W., M.A. *Trinity Rectory, Albany
 Street, N.W.*
 1871.
Aug. 9. CANTERBURY, HIS GRACE THE LORD ARCH-
 BISHOP OF, D.D. F.R.S. &c. &c. &c. *Lambeth
 Palace, S.*; *Addington Park, Croydon, Surrey.*
Ɔ Carryer, S. Esq. *Parkfield House, Hartshill, Stoke-
 upon-Trent.*
Ɔ Chance, Edward, Esq. J.P. *Lawnside, Malvern.*
Ɔ Cheyne, R. R. Esq. F.R.C.S. Eng. 27, *Nottingham Pl. W.*
Ɔ Clegg, Thomas, Esq. Liberian Consul, Memb. Institut
 d'Afrique, &c. *Cheetham Hill, Manchester.*
 1871.
Dec. 4. Close, The Very Reverend F., D.D. Dean of Carlisle,
Deanery, Carlisle.
Ɔ Conway, Rev. William, M.A. Canon of Westminster, and
 Rector of St. Margaret's, Westminster, 17, *Dean's
 Yard, Westminster, S.W.*
 1871.
Oct. 24. † Coote, A. C. P. Esq. B.A. *Dungarvan House, Tun-
 bridge Wells.*
Ɔ Crawford, Lieut.-General R. Fitzgerald, R.A. *Erskine
 House, Harrow, N.W.*

D.

1871.

May 20. DARTMOUTH, THE RIGHT HONOURABLE THE EARL OF, 40, *Grosvenor Square, W.*; *Carlton Club*; *Patchull, Wolverhampton.*

JD Davis, Rev. Weston B., M.A. Principal Torquay Preparatory College, *Apsley House, Torquay.* (HON. LOC. SEC.)

JD ¶* Davison, Rev. M. *Fairview House, Downs Road, Clapton, E.*

1871.

March 6. † Day, William, Esq. *Westwood Park, Forest Hill, S.E.*

JD Deane, Rev. Charles, D.C.L. Oxon. (formerly Fellow of St. John's Coll.) *Rosmore, Spring Grove, W.*

JD ¶* De La Mare, Rev. A., M.A. Cantab. *Rector of St. Thomas, Woolwich, S.E.*

1871.

Oct. 24. Dick, W. Fitzwilliam, Esq. M.P. 20, *Curzon Street, W.*; *Carlton Club*; *Hume Wood, Baltinglass, Co. Wicklow.*

JD Duke, Rev. Edward, M.A. F.G.S. *Lake House, Salisbury.*

JD Duncan, James, Esq. Merchant, 6, *Aldermanbury Postern, E.C.*

JD Duncan, William Aver, Esq. *Woodlands House, Red Hill.*

E.

1870.

Nov. 21. Edmond, Francis, Esq. Advocate, 5, *Albyn Place, and Kingswells, Aberdeen.*

1871.

Oct. 24. Edwards, Rev. A. T., M.A. Rector of St. Philip's, Kennington, 39, *Upper Kennington Lane, S.E.*

℥ Ellis, William Robert, Esq. M.A. Cantab. Barrister-at-Law, 197, *Maida Vale, W.*

F.

℥ ‡ Fairfax, John, Esq. (Proprietor of *Sydney Morning Herald*), *Sydney, New South Wales* (83, *Coleman Street, E.C.*).

1870.

Dec. 5. † Faulconer, R. S. Esq. *Clarence Road, Clapham Park, S.*

℥ * Fishbourne, Rear-Admiral Edmund Gardiner, C.B. Vice-President of the Royal United Service Institution, 2, *Duke Street, W.C.*

℥ *† Fowler, Robert N. Esq. M.A. M.P. 50, *Cornhill, E.C.* (TRUSTEE.)

℥ * Fraser, James Alexander, Esq. M.D. Inspector-General of Army Hospitals, 11, *Woodside, Victoria Road, Gipsy Hill, S.E.*

G.

⚡ Gailey, Alexander, Esq., Merchant, *Hareney Park, Hornsey, N.*

⚡ ¶ Garbett, Rev. Edward, M.A. Oxon. *Christ Church Parsonage, Surbiton Hill, S.W.*

⚡ Gell, Rev. John Philip, M.A. 63, *Ladbroke Grove, Kensington Park, W.*

⚡ Glyn, Rev. Sir George L. Bart. M.A. Vicar of *Ewell, Surrey.*

1868.

Mar. 2. Gooddy, Edward C. Esq. *The Edge, near Meltham, Huddersfield.*

1870.

Feb. 7. Geren, James Newton, Esq. M.A. Cantab. (Senior Fellow Queen's Coll. Camb.), Barrister-at-Law, 6, *Stone Buildings, Lincoln's Inn, W.C.*

1871.

Aug. 9. Gorman, Rev. T. M. 13, *Campden Grove, Kensington, W.*

⚡ ¶ * Gosse, Philip Henry, Esq. F.R.S. *Sandhurst, Torquay.*
(VICE-PRESIDENT.)

1867.

June 17. ¶ * Graham, Rev. Charles, 1, *Belgrave Terrace, Shepherd's Bush, W.*

⚡ † Griffith, John, Esq. 6, *Hanover Terrace, Regent's Park, N.W.*

H.

1871.

May 20. Haldane, Alexander, Esq. Barrister-at-Law, 118, *Westbourne Terrace, W.*

† Hall, J. Esq. Merchant, 1, *New London Street, E.C.*

Halsted, Vice-Admiral Edward Pellew, 86, *Ebury Street, S.W.*

Hardwicke, Robert, Esq. F.L.S. 192, *Piccadilly, W.*

1871.

May 1. HARRIS, THE RIGHT HONOURABLE THE LORD, G.C.S.I. 47, *Charles Street, Berkeley Square, W.*; *Belmont, Faversham, Kent.*

Harrison, Gibbs Crawford, Esq. H.M. Civ. Serv. 222, *Marylebone Road, N.W.*

1871.

June 9. Harrison, J. W. Esq. 156, *Hampstead Road, N.W.*

1871.

May 1. HARROWBY, THE RIGHT HONOURABLE THE EARL OF, K.G. 39, *Grosvenor Square, W.*; *Sandon Hall, Stone, Staffordshire.*

Healey, Elkanah, Esq. *Oakfield, Gateacre, Liverpool*; and "Engineer" Office, *Strand, W.C.*

1869.

Apr. 5. * Henslow, Rev. George, M.A. F.L.S. F.G.S. F.C.P.S. 17, *Colville Terrace West, Notting Hill, W.*

1870.

Oct. 10. Hiles, Joseph, Esq. Mem. Liv. Geol. Soc. *Irene, Clifton Road, West Derby Road, Liverpool.*

1871.

May 15. Hill, Rev. James, D.D. *Greenwich Hospital, S.E.*

- ℥** Hitchman, Rev. Richard (St. Aidan's College).
 1867.
 Nov. 11. Hooley, William, Esq. Banker, *Mile End, Stockport*.
℥ Horton, Captain William, R.N. *United Service Club,*
Pall Mall, S.W.
 1871.
 Aug. 9. Houldsworth, James, Esq. 36, *Queen's Gate, W; Coltness,*
Wishaw, Lanarkshire, N.B.
 1869.
 Jan. 18. Howard, James, Esq. M.P. *Bedford*.

I.

- ℥** † Ince, Joseph, Esq. Assoc. K.C.L. M.R.I. F.L.S. F.G.S.
 &c. 26, *St. George's Place, Hyde Park Corner,*
S.W.
℥ * Ince, William H. Esq. F.L.S. F.R.M.S. F.R.H.S. 27,
Thurloe Square, Brompton, S.W.
℥ ¶ Irons, Rev. William J., D.D. Oxon. Prebendary of St.
 Paul's, Rector of *Wadingham, Kirton Lindsey,*
Lincolnshire.

J.

1867.
 Aug. 5. Jackson, John J. Esq. Colonial Broker, *Fern Cliff, St.*
John's Park, Blackheath, S.E.

1870.

Feb. 21. James, Herbert, Esq. H.M. Civil Serv. *The Admiralty, Somerset House, W.C.*

✠ James, Rev. John, M.A. *Rector of Avington, Berks*

1871.

March 6. Jardine, J., M.A. LL.D. B.L. University of France, *National Club, Whitehall, S.W.*

✠ Jenkins, D. J. Esq. 61, *Marquis Road, Canonbury, N.*

1869.

June 21. Jenkins, Rev. E. E., M.A. *Southport.*

✠ Jepps, Charles Frederick, Esq. *Claremont Villas, Streatham Hill, S.*

✠ Johnson, Rev. Edward, *Albert Cottage, Mount Pleasant, Newcastle-under-Lyme. (HON. LOC. SEC.)*

✠ Johnston, D. W. Esq. *Dalriada, Belfast.*

1868.

Feb. 17. *Jones, H. Cadman, Esq. Barrister-at-Law, M.A. Cantab. late Fellow Trin. Coll. Camb. 4, *Old Buildings, Lincoln's Inn, W.C.*

K.

1871.

✠ Kemble, Rev. Charles, M.A. Oxon. Prebendary of Wells, Rector of Bath, *Vellore, Bath, Somerset.*

1869.

May 3. Kiell, George Middleton, Esq. 8, *Kensington Park Gardens, W.*

✠ ¶ Kirk, Rev. John, Professor of Practical Theology in the Evangelical Union Academy at Glasgow, 17, *Greenhill Gardens, Edinburgh.*

L.

1869.

Sept. 20. Laird, John, Esq. M.P. 10, *Park Place, St. James's Street, S.W.*; and *Birkenhead*.

℥ Lawrence, Lieut.-General Sir A. J., K.C.B. *Clapham Common, S.W.*

1869.

May 3. * Learoyd, Nehemiah, Esq. 17, *Finchley Road, N.W.*

℥ Lewis, Joseph, Esq. R.N. *Hamilton Villa, Southampton*.

℥ Lidgett, George, Esq. B.A. Lond. 11, *Blackheath Terrace, S.E.*

1869.

Feb. 1. Lindsay, James S. Esq. Merchant, *Wheatfield, Belfast*.

℥ Lloyd, B. S. Esq. Merchant (*Office*), 3, *George Yard, Lombard Street, E.C.*

1871.

March 6. Lloyd, Charles, Esq. *Merton Lodge, Chiswick, W.*

1867.

Feb. 18. Lomas, Thomas, Esq. H.M. Civ. Serv. *Malvern House, Buxton, Derbyshire*.

1871.

May 1. LONDON, THE RIGHT HONOURABLE AND RIGHT REVEREND THE LORD BISHOP OF, D.D. *London House, St. James's Square, W.*; *Fulham Palace, S. W.*

℥ Lowe, Rev. R. T., M.A. Cantab. Mem. Lisbon Roy. Acad. of Sciences, Cor. Mem. Z.S.L. *Lea Rectory, Gainsborough*.

1867.

Nov. 18. LUSH, THE HON. SIR ROBERT, Judge of the Court of Queen's Bench, 60, *Avenue Road, N.W.*

1868.

June 15. Lysons, Rev. Samuel, M.A. F.S.A. Hon. Canon of Gloucester Cathedral, *Hempsted Court, near Gloucester.*

M.

1869.

Jan. 18. Macafee, A. H. C. Esq. *Sydney, New South Wales* (83, *Coleman Street, E.C.*)

1868.

Feb. 17. Macmillan, Rev. Archibald, 45, *Warrington Crescent, Warwick Road, Maida Vale, W.*

⚡ Manners, Rev. John, M.A. Cantab. 6, *Victoria Park Square, N.E.*

1871.

May 1. MARLBOROUGH, HIS GRACE THE DUKE OF, K.G. P.C. 10, *St. James's Square, S.W.*; *Blenheim House, Woodstock, Oxfordshire.*

⚡ Marsh, Rev. Sir W. R. Tilson-, *Bart.* M.A. Oxon. *Oxford and Cambridge Club, Pall Mall, S.W.*

⚡ *†McARTHUR, ALEXANDER, Esq. F.R.G.S. F.A.S.L. Merchant, *Raleigh Hall, Brixton Rise, S.W.* (VICE-PATRON.)

⚡ McArthur, William, Esq. M.P. 1, *Gwydyr Houses, Brixton Rise, S.W.*

1869.

June 21. ¶ M'Cann, Rev. James, D.D. F.R.S.L. F.G.S. Incumbent of St. Jude's Church, Glasgow, 9, *Shaftesbury Terrace, Glasgow.*

† McFarlane, Patrick, Esq. *Comrie, Crieff, Perthshire.*

1869.

June 21. *Masterman, Thomas William, Esq. *Gordon Lodge, Reading.*

1868.

Mar. 2. Mewburn, William, Esq. *Wykham Park, Banbury.*

† Miller, William V. Esq. R.N. *Trellis Cottage, Whitepoint, Queenstown.*

† Milner, Rev. John, B.A.Oxon. Chaplain R.N. *H.M.S. Excellent, Portsmouth, and Hartley, near Brough, Westmoreland.*

† ¶* Mitchell, Rev. Walter, M.A.Cantab. Rector of *Purton, near Swindon.* (VICE-PRESIDENT.)

† Monckton, Lieut.-Col. *the Hon. H. M. near Wellington College, Berkshire.*

1867.

June 3. † MORLEY, SAMUEL, Esq. M.P. *Craven Lodge, Stamford Hill, N.*

† ¶* Morshead, Edward J. Esq. H.M. Civ. Serv. 32, *Kenton Street, W.C.* (HON. FOREIGN SECRETARY.)

1871.

May 1. Moyle, Rev. Vyvyan H., M.A. F.L.S. F.G.S. F.R.G.S. F.R.H.S. President of the Cleveland Literary and Philosophical Society, and Naturalists' Field Club, *Normanby House, Middlesborough; Clergy and Laity Club; St. Stephen's Club, S.W.*

1868.

Jan. 20. Mullings, Richard, Esq. Solicitor, *Stratton, near Cirencester.*

N.

⚡ Napier, John, Esq. Shipbuilder, *Saughfield House, Glasgow.*

⚡ Napier, Robert, Esq. Shipbuilder, *Glasgow; West Shandon, Dumbartonshire.*

1870.

May 2. Newman, Robert Rutland, Esq. Solicitor, 53, *Upper Bedford Place, W.C.*

⚡ * Newton, Alfred V. Esq. F.A.S.L. *Cleveland Villa, Lee, S.E.*

⚡ Niven, Rev. William, B.D. Incumbent of St. Saviour's, Chelsea, 5, *Walton Place, Chelsea, S.W.*

O.

⚡ * Ord, William M. Esq. M.D. Lond. Lecturer on Physiology and on Comparative Anatomy, St. Thomas's Hospital, 16, *The Paragon, Streatham Hill, S.W.*

⚡ * Owen, Rev. J. B., M.A. Cantab. Rector of St. Jude's, Chelsea, 40, *Cadogan Place, Chelsea, S.W.*

P.

- ⚡ Patton, John, Jun. Esq. 11, *Pembury Road, Lower Clapton, E.*
 ⚡ Pears, Rev. Edmund W., M.A. Oxon. *St. Peter's Rectory, Dorchester.*
 ⚡ † PEEK, HENRY WILLIAM, Esq. M.P. J.P. for Surrey, *Wimbledon House, S.W.* (VICE-PATRON.)
 ⚡ * Petrie, Captain Francis W. H. (late 11th Regiment), F.R.S.L. F.G.S. Member of the Royal Archæological Institute, 11, *Gloucester Terrace, Campden Hill, Kensington, W.* (HON. SECRETARY.)

1871.

- Oct. 24. Phayre, Rev. R., M.A. *West Raynham Rectory, Brandon.* (HON. LOC. SEC.)

1871.

- Dec. 4. Price, Rev. Aubrey Charles, M.A. Chaplain to the Lord Bishop of Durham, Vicar of St. James's, Clapham, *Loat's Road, Clapham Park, S.W.*
 ⚡ Prothero, Thomas, Esq. F.S.A. M.R.I. Barrister-at-law, 16, *Cleveland Gardens, W.*

R.

⚡ Ratcliff, Charles, Esq. *Wyddrington, Edgbaston, Birmingham.*

⚡ * Rigg, Rev. James H., D.D. 130, *Horseferry Road, Westminster, S.W.*

1871.

April 10. Robbins, Rev. J., D.D. Ch. Ch. Oxon. Barrister-at-Law of the Inner Temple, Vicar of St. Peter's, Bayswater, 88, *Kensington Park Road, W.*

⚡ Robertson, Peter, Esq. H. M. Civ. Serv. *Neworth, Kelso, N.B.*

1867.

Dec. 16. ¶* Row, Rev. C. A., M.A. Oxon. 55, *Gloucester Crescent, Regent's Park, N.W.*

1868.

Nov. 30. RUTLAND, HIS GRACE THE DUKE OF, K.G., Lord Lieutenant of Leicestershire, &c. &c. 10, *Cromwell Road, S.W. ; Belvoir Castle, Grantham ; and Cheveley Park, Newmarket.*

S.

1871.

Mar. 20. † Sargood, Augustine, Esq. Q.C. Sergeant-at-Law, 2, *Belsize Road, N.W.*

1871.

Aug. 9. Savil, Rev. F. A., M.A. Trin. Coll. Camb. J.P. Rector of Torwood, *Ardmore, Torquay.*

⚡ Scales, George J. Esq. Merchant, *Belvoir House, Hornsey Lane, N.*

1870.

Jan. 17. Scott, Rev. Robinson, D.D. *Wesleyan College, Belfast.*

℥ Selwyn, Captain Jasper H., R.N. *Chequers Court, Tring, Herts. (Messrs. Stilwell, 22, Arundel Street, Strand, Agents.)*

℥ *† SHAFTESBURY, THE RIGHT HON. THE EARL OF, K.G. 24, *Grosvenor Square, W. (PRESIDENT.)*

℥ Shaw, E. R. Esq. B.A. *Tulse Hill School, Brixton, S.W.*

℥ Shaw, John, Esq. M.D. F.L.S. F.G.S., &c. *Viatoris Villa, Boston, Lincolnshire; and Reform Club, London, S.W.*

℥ Shaw, Rev. William, 2, *Stanley Villas, Brixton Rise, S.W.*

1871.

June 5. † Sheppard, Rev. Henry Winter, M.A. *The Rectory, Emsworth, Hampshire.*

1871.

Feb. 6. Shersby, Henry, Esq. 3, *Samuel Street, Woolwich, S.E.*

1871.

April 17. Shettle, R.C., Esq. M.D. Physician to the Royal Berkshire Hospital, 97, *London Street, Reading.*

℥ Shields, John, Esq. *Church Street, Durham.*

1869.

Jan. 18. Shillington, John J. Esq. Merchant, *Belfast.*

℥ Silver, Stephen W. Esq. Manufacturer, *Bishopsgate Street Within, E.C.*

1871.

Dec. 4. † Smith, Major H. D. Broughton, H.M. Indian Army, *Sumbulpoor Central Provinces (Messrs. Richardson, 13, Pall Mall, S.W.)*

1870.

Nov. 7. Smith, Neil, Jun. Esq. A.M. 14, *Carden Place, Aberdeen.*

- † Smith, Protheroe, Esq. M.D. M.R.I. 42, *Park Street, Grosvenor Square, W.*
 1869.
 May 10. Smith, The Very Rev. R. Payne, D.D. Dean of Canterbury, *The Deanery, Canterbury.*
 † Smith, W. Castle, Esq. F.R.G.S. M.R.I. Solicitor, 1, *Gloucester Terrace, Regent's Park, N.W.*
 1870.
 April 4. Smith, Rev. William Saumarez, M.A. Cantab. Fellow of Trin. Coll. Camb. Principal of *St. Aidan's Theological College, Birkenhead.*
 1868.
 Oct. 19. Stone, David Henry, Esq., Alderman of London, 13, *Poultry, E.C., and Castleham, Hollington, Sussex.*
 Stalkartt, John, Esq. 5, *Winchelsea Crescent, Dover.*
 Sutherland, P. C. Esq. M.D. M.R.C.S. Edin. F.R.G.S. Surv. Gen. *Pietermaritzburg, Natal.*

T.

- Thomas, William Cave, Esq. Historical Painter, 202, *Camden Road Villas, N.W.*
 ¶*Thornton, Rev. Robinson, D.D. Oxon. *Trinity College, Glenalmond, Perthshire.* (VICE-PRESIDENT.)
 1871.
 April 10. Tischendorf, Constantin de, Th.D., Ph.D., D.C.L., LL.D., Professor of Biblical Paleography at the University of Leipsic, *Leipsic.* (HONORARY FOREIGN CORRESPONDENT.)
 1867.
 Aug. 5. ¶* Titcomb, Rev. J. H., M.A. Rector of St. Stephen's, *Wingfield House, South Lambeth Road, S.W.*

Ɔ Townley, Dr. James, L.R.C.P. Edin. F.R.C.S. Engl. 302,
Kennington Park Road, S.

1871.

Aug. 9. TROWER, THE RIGHT REVEREND BISHOP, D.D.
late Bishop of Gibraltar, formerly Fellow of Oriel,
Rector of Ashington. *The Rectory, Ashington,*
Steyning.

Ɔ Twells, Rev. John, M.A. Cantab. Prebendary of Lincoln,
Rural Dean, Rector of *Gamston, Notts.*

Ɔ † Twells, Philip, Esq. M.A. Oxon. *Chase Side House,*
Enfield.

V.

Ɔ Vallack, Rev. B. W. S., B.A. Oxon. *St. Budeaux's*
Vicarage, near Plymouth.

1869.

Feb. 15. Vanner, Henry Thornton, Esq. 32, *Great St. Helen's,*
E.C.

Ɔ Vanner, James Englebert, Esq. Merchant, *Camden*
Wood, Chislehurst, S.E.

1867.

June 17. Vanner, John, Esq., *Banbury.*

Ɔ * Vanner, William, Esq. F.R.M.S. Merchant, *Camden*
Wood, Chislehurst, S.E.

Ɔ Vickers, J. J. Esq. 3, *Brixton-Hill Terrace, Brixton*
Hill, S.W.

W.

- ⚡ * Waddy, Samuel Danks, Esq. B.A. Barrister-at-Law,
 3, *Essex Court, Temple, E.C.*
- ⚡ Waddy, Rev. S. D., D.D. *Redlands, Bristol.*
 1871.
- Feb.* 20. Wade, Major I. P. Carruthers, 6, *Wemyss Place, Queen Street Gardens, Edinburgh, W.*
 1867.
- June* 3. Walrond, T. H. M. Esq. 157, *Cambridge Street, Pimlico, S.W.*
 1871.
- May* 1. † Walter, John, Esq. M.P. 40, *Upper Grosvenor Street, W. ; Bearwood, Berkshire.*
 1870.
- Oct.* 10. Walters, Gregory Seale, Esq. 12, *Chester Terrace, Regent's Park, N.W.*
 1871.
- May* 1. Warner, F. I., Solicitor, 3, *Clifton Terrace, Winchester.*
 1871.
- Mar.* 6. Weldon, Rev. George Warburton, M.A. Vicar of St. Saviour's, Chelsea, 4, *Vincent Street, Ovingdon Square, S.W.*
- ⚡ * West, William Nowell, Esq. 30, *Montague Street, Russell Square, W.C.* (HONORARY TREASURER.)
- ⚡ ¶ Wheatley, J. H. Esq. Ph.D. F.G.S. *Abbey View, Sligo* (HON. LOC. SEC.)
 1868.
- Feb.* 17. White, Rev. Lewis Borrett, M.A. Oxon. Rector of St. Mary Aldermary, 67, *Queen Street, Cheapside, E.C.*
- ⚡ Whitwell, Edward, Esq. *Fair Field, Kendal, Westmoreland.*

1870.

Mar. 21. Wilkinson, Thomas, M.D. St. Andrew's, F.R.C.S. Ireland, 20, *Trinity Square, Brixton, S.W.*

Ɔ Williams, Rev. John, M.A. Cantab. 11, *Mecklenburgh Square, W.C.*

Ɔ Williams, George, Esq. Merchant, 30, *Woburn Square, W.C.*

Ɔ Wollaston, Thomas Vernon, Esq. M.A. F.L.S. &c. 1, *Barnepark Terrace, Teignmouth.*

1871.

Aug. 9. *Wood, Rev. J. G., M.A. F.L.S. 9, *Erith Road, Belvedere, S.E.*

Ɔ *† Woodhouse, Alfred J. Esq. L.D.S. M.R.I. F.R.M.S. 1, *Hanover Square, W.*

Ɔ Wright, Francis Beresford, Esq. M.A. Cantab. J.P. F.R.H.S. *Aldercar Hall, Langley Mill, Nottingham.*

Ɔ Wright, Rev. Henry, M.A. Oxon. *Standard Hill, Nottingham.*

Ɔ † Wright, J. Hornsby, Esq. 2, *Abbey Road, Maida Hill, N.W.*

Ɔ Wyman, C. W. H. Esq. 53, *St. John's Park, Upper Holloway, N.*

Y.

1871.

Jan. 30. Yeates, A. G. Esq. *Collinson House, Effra Road, Brixton, S.W.*

Ɔ Young, Rev. Charles, M.A. Cantab. 36, *Sussex Square, Brighton.*

ASSOCIATES.

(Life Associates †.)

-
- ƒ** Adam, Rev. Stephen C., M.A. Cantab. Assoc. Sec. for
 Irish Missions, *St. Jude's Vicarage, 7, Tottenham
 Road, Wolverhampton.*
 1871.
Feb. 6. Allen, J. Esq. 71, *Long Acre, W.C.*
 1871.
June 9. Arnott, Rev. S., M.A. *Vicarage, Turnham Green, W.*
 1871.
June 9. Baker, Rev. W., M.A. *Crambe Vicarage, near York.*
ƒ Barker, Rev. Joseph H., M.A. Cantab. *South House,
 Hereford.*
ƒ Bartlett, Mrs. *Sussex Square, Brighton.*
ƒ ¶ Baylee, Rev. Joseph, D.D. late Principal of *St. Aidan's
 College, Birkenhead.*
 1871.
Feb. 30. Beckwith, Miss Jessie H. *Spring Bank, Malvern.*
 1870.
April 4. Bourn, Rev. H. H., F.R.S.L. *Milford Road, Sudbury,
 Suffolk.*
 1871.
June 5. Bowe, Rev. W. *St. John's, Weardale, Darlington.*
 1868.
Jan. 6. Brebner, Alexander C. Esq. H.M. Civ. Serv. *Audit
 Office, Somerset House, W.C.*

1869.

Feb. 1. Bretherton, Francis, Esq. Stockbroker, *Melville Lodge, Tulse Hill, S.W.*

JF Broke, Miss, 4, *Marlborough Buildings, Bath.*

1871.

Mar. 20. Brooks, Rev. J. W., M.A. Prebendary of Lincoln, *Great Ponton Rectory, near Grantham.*

1871.

May 1. Broome, Rev. J. H., M.A. *Haughton Hall, Roughton.*

1871.

May 22. Burls, C. Esq. *Peckham Rye Common, S.E.*

JF Burgess, Captain Boughey (late H.M. Indian Army), Secretary to the Royal United Service Institution, *Whitehall Yard, S.W.*

1867.

June 3. Colan, Hunter Alexander, Esq. M.R.C.S. Lond. *School of Gunnery, Shoeburyness, Essex.*

JF Colan, Thomas, Esq. M.D. Surgeon R.N. *H.M.S. Rattlesnake, Cape of Good Hope.*

JF Cosens, Rev. W. Reyner, M.A. Oxon. et Cantab. *Vicarage, Dudley.*

JF Cowan, Rev. Ernest, B.A. Cantab., Assoc. Sec. C. & C. Ch. Soc. *St. John's Vicarage, Blackheath.*

JF † Curteis, Mrs. J., *Aldenham, St. James's Road, Tunbridge Wells.*

JF Delpratt, W. Esq. M.R.C.S. *National Club, Whitehall Gardens, S.W.*

1869.

May 3. DERRY and RAPHOE, THE RIGHT REV. THE LORD BISHOP OF, *Athenæum Club, London, S.W. ; and the Palace, Derry.*

Jan. 18. Dibdin, R. W. Esq. F.R.G.S. 62, *Torrington Square, W.C.*

Jan. 18. Dibdin, Charles, Esq. F.R.G.S. H.M. Civ. Serv. 62,
Torrington Square, W.C.

1876.

Mar. 7. Dugmore, Rev. H. H. *Queenstown, Cape of Good Hope.*

£ Ensor, Thomas, Esq. Merchant, *The Cottage, St. Leonard's, Exeter.*

1869.

Feb. 15. † Finley, Samuel, Esq. Merchant, *Montreal, Canada*
(83, *Coleman Street, E.C.*).

1871.

Dec. 4. Franklyn, Rev. T. E., M.A. *Christchurch Vicarage, Tunbridge Wells.*

£ Gardiner, Major G. C., R.S.F. 25, *Grosvenor Mansions, Westminster, S.W.*

£ † Gedge, Sydney, Esq. M.A. (Corpus Christi Coll. Cambridge) *Mitcham Hall, Surrey.*

£ Grant, Captain Henry D., R.N. 4, *Sussex Place, Southsea.*

£ Hamilton, William, Esq. M.D. L.R.C.S. Ireland,
Agra Villa, Torquay, Devon.

£ Hare, Rev. Henry, A.B. Chaplain to the Forces, *Parkhurst Barracks, Isle of Wight.*

1871.

Feb. 20. † Harries, G. Esq. *Richestone, Milford Haven.*

1870.

May 2. Harris, William John, Esq. M.R.C.S.E. L.A.C. F.M.S.
13, *Marine Parade, Worthing.*

1869.

Mar. 1. Harvard, Rev. John, *Wesley College, Sheffield.*

⚡ Haughton, Edward, Esq. M.D. Edin. M.R.C.S. Eng.
A.B. T.C.D. 80, *Kensington Park Road, W.*

1871.

June 5. Hoare, Rev. William H., M.A. *Oakfield, Crawley, Sussex; Oxford and Cambridge Club, S.W.*

⚡ Hunt, Thornton, Esq. 26, *Euston Square, W.C.*

1871.

June 5. Irons, Mrs. W. J. *Wadingham Rectory, Kirton Lindsey.*

⚡ Ivall, David, Esq. *Somers Cottage, Upper Tulse Hill, S.W.*

1871.

April 10. Liddon, Rev. H. P., D.D. D.C.L. Canon of St. Paul's,
Dean Ireland's Professor of Exegesis in the University of Oxford, *Christ Church, Oxford; 3, Amen Court, E.C.*

1871.

June 5. Lloyd, Rev. R., M.A. (Jesus Coll. Camb.) *Calverley Terrace, Tunbridge Wells.*

⚡ Lucas, H. Walker, Esq. *Mount Rose, Oldfield Road, Bath.*

⚡ † Lycett, Sir Francis, Ex-Sheriff of the City of London,
18, *Highbury Grove, N.*

⚡ Maberley, G. Esq. 46, *Boundary Road, St. John's, N.W.*

1871.

April 10. Mitchell, H. S. Esq. 135, *Adelaide Road, N.W.*

1871.

March 20. Murdock, J. G. Esq. 11, *Elvaston Place, South Kensington, S.W.*

1869.

May 3. Money, Rev. C. F. S., M.A. Cantab. *St. John's Parsonage, Upper Lewisham Road, S.E.*

¶ Moule, Rev. Henry, M.A. Cantab. Vicar of *Fordington, Dorset.*

1871.

Oct. 24. Nelson, J. H. Esq. *Camden Place, Lewisham.*

1871.

March 6. Nicholl, Rev. R., M.A. *The Chantry, Norton, near Sheffield.*

¶ Payne, William, Esq. *Guildhall, City.*

1871.

April 10. Poulson, E. Esq. 135, *St. George Street East, E.*

1869.

Mar. 1. Race, George, Esq. Merchant, *Westgate, Weardale, Darlington.*

¶ Rainey, A. C. 5, *Manders Terrace, Ranelagh, Dublin.*

¶ Salt, Mr. Thomas G. Chemist, 7, *Downs Park Road, Shacklewell, N.E.*

1870.

Apr. 18. ¶ Savile, Rev. Bouchier Wray, M.A. Cantab. *Launcells Vicarage, Stratton, Cornwall.*

1871.

April 10. Selwyn, Rev. W., D.D. Prebendary of Ely, Margaret Professor of Divinity Cambridge, Chaplain in Ordinary to the Queen, *St. John's, Cambridge.*

1871.

April 17. Seymour, Rev. W. S. M.A. 11, *Capel Terrace, Tredegar Square, Bow Road, E.*

1871.

April 10. Sharpnell, Fleetwood Keats, Esq. 2, *Lansdowne Crescent, Stockwell, S.*

✠ Skrine, Rev. C., M.A. 20, *Devonshire Terrace, Hyde Park, W.*

1871.

June 19. Stevenson, Rev. J. F., LL.B. *King's Road, Reading.*

1871.

Aug. 9. Strutt, Rev. P. 9, *Alma Square, St. John's Wood, N.W.*

1869.

Mar. 1. Smith, Samuel Hill, Esq. *Sheffield.*

1870.

May 21. Sutcliffe, James T. Esq. *Bacup, near Manchester.*

1871.

May 1. Thomson, Mrs. Zoe, 4, *Albert Terrace, Douglas, Isle of Man.*

✠ Thornton, Rev. Samuel, M.A. Rector of St. George's, 142, *Hockley Hill, Birmingham.*

1871.

Feb. 20. Tremlett, Rev. F. W., D.C.L. Honorary Doctor of Philosophy of Jena Univ. F.R.G.S. Chaplain to Lord Waterpark, Ecclesiastical Commissary for the American Prelates and for the University of the South, Vicar of St. Peter's, Belsize Park, *The Parsonage, Belsize Park, N.W.*

1869.

Apr. 19. Turnbull, Robert O. Esq. 36, *Walnut Street, High Town, Manchester.*

✠ Vessey, Leonard Abington, Esq. 13, *College Green, Bristol.*

1871.

Aug. 9. Warleigh, Rev. H. S. *Rectory, Ashchurch, Tewkesbury.*

W Webster, Rev. W., M.A. late Fellow of Queen's Coll.
Cambridge, Incumbent of Montpelier Chapel, *Cam-*
bridge Park, Twickenham.

1871.

Aug. 9. Whitelock, Rev. B., M.A. F.R.M.S. Incumbent of
Groombridge, *Groombridge, Tunbridge Wells.*

1871.

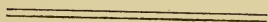
May 1. Whitfield, Rev. F., M.A. 17, *Lansdowne Road, Wim-*
bledon, S.W.

1870.

Mar. 17. Whitmee, Rev. S. J. *Samoa, South Pacific* (London Mis-
sionary Society, 8, *Blomfield Street, Finsbury, E.C.*)

1870.

May 2. Williams, Rev. Frederic, Exhib. from Eton Coll.
Scholar of C.C.C. B.A. Cantab. *Saltley Vicarage,*
near Birmingham.



APPENDIX (B).



LIST OF BOOKS

IN THE LIBRARY OF

The Victoria Institute,

DECEMBER 31st, 1871.

A.

- Academy, The. 2 vols. 1869-71.
- Adam and the Adamite ; or, the Harmony of Scripture and Ethnology. By D. M'Causland, Q.C., LL.D.
- Age of Man. By Professor Kirk, D.D.
- Ages of the Earth : Biblical Testimonies to the Earth's Antiquity and Progressive Development. By Rev. David Pitcairn, D.D.
- Ancient Empires : their Origin, Succession, and Results ; with a Preliminary View of the Unity and First Migration of Mankind.
- Ancient Pillar Stones of Scotland. By G. Moore, M.D.
- Animal Physiology. By W. B. Carpenter, M.D.
- Anti-Secularist Lectures. By Rev. J. McCann, D.D.
- Aphasia. By Dr. Bateman.
- Architecture. Reports and Papers read at the Meetings of the Architectural Societies of the County of York during the Year 1865.
- Astronomical Geology : A Treatise respecting the Causes to which the Structural and Superficial Configuration of the Earth's Crust is attributable. By R. G. M. Browne.
- Astronomy, Current Physical,—Critically Examined and Confuted. By J. Reddie.
- Astronomy. See *Mazzaroth ; Solar System, &c.*
- Athenæum, The, for 1870 and 1871. 4 vols.

B.

- Baddam's Philosophical Transactions. See *Royal Society*.
- Bagster's Chronological Atlas: a Complete Series of Maps
Elucidatory of the Sacred History.
- Bible, The.
- Bible, The. Speaker's Commentary. 2 vols.
- Bible Handbook, The. By Rev. J. Angus, D.D.
- Bible of every Land.
- Bible, Cruden's Concordance to the.
- Bible. See *Pentateuch ; Scripture*.
- Bible, The, and Modern Thought. By Rev. T. R. Birks, M.A.
- Bible, Truth of the. By Rev. B. W. Savile, M.A.
- Biblical and Theological Instruction, A Course of. 2 vols.
By Rev. J. Baylee, D.D.
- Biblical Criticism, A Compendium of. By F. Sargent.
- Biographical Treasury. By S. Maunder.
- Birds, British, The Food, Use, and Beauty of. By C. O. G.
Napier.
- Black Diamonds ; or, the Gospel in a Colliery District. By
H. H. Bourn.
- Botany :—
- Hortus Cantabrigiensis ; or, an Accented Catalogue of Indi-
genous and Exotic Plants cultivated in the Cambridge
Botanic Gardens. By James Don.
- Prodromus Systematis Naturalis Regni Vegetabilis. Par A.
De Candolle. 20 tom.
- British Empire, McCulloch's Account of the. 2 vols.
- British Quarterly Review. 2 vols. and 1 part.
- Builders of Babel, The. By Dominic M'Causland, Q.C., LL.D

C.

- Candlish, Rev. Dr. See *Genesis*.
- Candolle, A. De. See *Botany*.
- Cause and Effect; or, the Globe we Inhabit. By R. M. Browne, F.G.S.
- China. Ti-Ping Tien-Kwoh; the History of the Ti-Ping Revolution. 2 vols.
- Christ in the Pentateuch; or, Things Old and New concerning Jesus. By H. H. Bourn.
- "Christ is All:" The Gospel of the Pentateuch. By the Very Rev. Henry Law. 4 vols. (Pentateuch.)
- Christ of the Gospels, The, and the Romance of M. Rénan. By Rev. Dr. Schaff and M. Napoléon Roussel.
- Christ our Light. By the Rev. Charles Graham.
- Christian Evidences. See *Bible; Christ; Daniel; Ethnology; Geology; Gospel; Inspiration; Prophetic Outlines; Radiation; Scripture and Science; Shinar*.
- Christianity and Common Sense. By Sir W. Jones, Bart.
- Christianity, The Early Years of. By E. De Pressense, D.D.
- Christianum Organum; or, the Inductive Method in Scripture and Science. By J. Miller, M.A.
- Clergy List, 1872.
- Coal under Secondary Formations. See *Geology*.
- Colenso, Bishop:—
- A full Review and Exposure of Bishop Colenso's Errors and Miscalculations in his Work, "The Pentateuch and Book of Joshua Critically Examined." By the Hon. Judge Marshall.
- Anti-Colenso. By Johannes Laicus.
- An Old Indian's Plain Solution of some of the Difficulties of Dr. Colenso. By J. Stalkartt.
- Collisions at Sea, On the Value of Coloured Side Lights as a Means for preventing. A Lecture delivered at the Sailors' Home, by T. Gray.

Comparative Anatomy. By W. M. Ord, M.D.

Congressional Directory of the Third Session of the Forty-first Congress of the United States of America.

Concordance to the Bible, Cruden's. Large edition.

Concordance to the Bible, on the basis of Cruden. By J. Eadie, D.D., LL.D.

Creation, the Week of; or, The Cosmogony of Genesis considered in its Relation to Modern Science. By G. Warington.

Current Physical Astronomy Critically Examined and Confuted. By J. Reddie.

D.

Daniel, The Book of: Remarks on the Prophetic Visions in ;
with Notes on Prophetic Interpretation in connexion with
Popery, and a Defence of the Authenticity of the Book of
Daniel. By S. P. Tregelles, LL.D.

Death, Victory over. By Rev. W. Niven, B.D.

Deluge, The Mosaic: an Enquiry into the Truth and Certainty
of. By Patrick Cockburn, M.D.

Descent of Man. By C. Darwin. 2 vols.

Dictionary, English. By Dr. Nuttall.

Directories, The A, B, C. 1871.

„ The Court. 1871.

„ The Newspaper Press. 1871.

„ Parliamentary Companion. 1871.

Discoveries in Science by the Medical Philosopher: an Oration
delivered on the Ninety-sixth Anniversary of the Medical
Society of London. By Sir G. Duncan Gibb, Bart., M.D.

Dynamical Theory, The. By A. T. Ritchie. 1 vol. Also a
Copy in 8 parts.

E.

Earth, Ages of the. See *Ages*.

Earth, Physical History of the.

Eclectic Review, 1868. (Art. Anthropology.)

Edinburgh Gazetteer, 6 vols.

Edinburgh Philosophical Journal, 7 vols.

Edinburgh University Calendar.

Electric Telegraph, The. By Dr. Lardner.

Electric Telegraph: Authorship of the Practical Electric Telegraph of Great Britain. By Rev. T. F. Cooke, M.A.

English Mechanic. Vol. XII.

Ethnology:—

Papers offered for Discussion at the Meeting of the British Association at Dundee, in Reply to the Speculations recently promulgated in regard to the Antiquity and Nature of Man. By Rev. James Brodie, A.M.

The First Man and his Place in Creation, considered on the Principles of Science and Common Sense, from a Christian Point of View. With an Appendix on the Negro. By G. Moore, M.D.

See *Adam and the Adamite; Flint Implements*.

Evangelical Alliance: Proceedings of the Amsterdam Conference, August, 1867.

Exodus of Israel, The; its Difficulties Examined, and its Truth Confirmed. By Rev. T. R. Birks, M.A.

Exposition of Hebrews VI. By A. Brown.

F.

Facts and Dates. By Rev. A. Mackay, LL.D.

Fiji and the Fijians. By Thomas Williams and James Calvert.
2 vols.

First Man, The. · See *Ethnology*.

Flint Implements from Drift not Authentic ; being a Reply to
the Geological Evidences of the Antiquity of Man. By
N. Whitley.

Food Journal, 1870 and 1871.

Fresh Springs of Truth ; a Vindication of the Essential Prin-
ciples of Christianity.

G.

Genesis, Book of, Review of Rev. Dr. Candlish's First Lecture on Genesis. By P. M'Farlane, M.V.I.

Genesis. See *Creation, Week of*.

Geography, System of. By James Bell. 12 vols.

Geology :—

A New System of Geology, in which the Great Revolutions of the Earth and Animated Nature are reconciled at once to Modern Science and Sacred History. By A. Ure, M.D.

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See *Flint Implements*.

Sermons in Stones; or, Scripture confirmed by Geology. By D. M'Causland, Q.C., LL.D.

Gloucestershire. See *Language*.

God's Word Written. By Rev. E. Garbett, M.A.

Gospel Truths. By R. Brown.

H.

Handbook of the Year 1868. By G. H. Townsend.

Harmony of the Bible with Experimental and Physical Science.
By Rev. A. Rigg, M.A.

Heavens, The, a Physical Description of. By Alexander Von Humboldt.

Hebrew Poetry, Metrical Versions of Early. By F. Rolleston.

Henslow, Memoir of the late Professor. By his Son.

Herodotus. By Professor Rawlinson. 4 vols.

Herschel, Sir J. F. W., Preliminary Discourse on the Study of Natural Philosophy.

Hortus Cantabrigiensis, Don's. See *Botany*.

I.

Imperial Calendar.

Imperial Cyclopædia of the Sciences and Arts. 4 vols.

Inspiration : its Nature and Extent. By Rev. C. A. Row, M.A.

Inspiration. See *God's Word Written*.

Israel : An Exposition, Critical, Explanatory, and Practical, of Hebrews vi. 4-8, with Reference likewise to Israel as a Nation, in connexion with this particular passage of Scripture. By R. Brown.

Italy, The Awakening of, and the Crisis of Rome. By Rev. J. A. Wylie, LL.D.

J.

Jah, The Wonderful Word. By E. Poulson.

K.

Keys to Scriptural Problems By Rev. W. Baker, M.A.

L.

Language. See *Our Vulgar Tongue*.

Language. See *Shinar*.

Laws of Vital Force in Health and Disease ; or, the True Basis of Medical Science. By Dr. E. Haughton.

Lempriere's Classical Dictionary.

Life Science, Thoughts on. By B. Place.

Life Science, Thoughts on. By Rev. E. Thring, M.A.

Literature, Schlegel's History of.

London Quarterly Review, 1870-71. 4 vols. and current parts.

M.

Matter : What is Matter? By an Inner Templar.

Mazzaroth ; or, the Constellations. By Fr. Rolleston. 2 copies.

Mechanic, The English. 1870-71.

Medical Times, 1870-71.

Medical Philosopher, Discoveries in Science by the.

Meteorology : The Weather Book. By Rear-Admiral Fitzroy.

Metrical Versions of Early Hebrew Poetry. By Fr. Rolleston.

Mineral and Mosaical Geologies, a Comparative Estimate of
the. By Granville Penn.

N.

Natal, Bishop of. See *Colenso, Bishop*.

Natural Philosophy. 2 vols.

Natural Philosophy.

Natural Philosophy, Treasury of.

Nature : a Weekly Illustrated Journal of Science. Vols. I. to IV

Notes and Queries, 1870 and 1871. 4 vols.

O.

Optics. By Sir David Brewster.

Our British Ancestors. By the Rev. Canon Lysons, M.A.

Our Vulgar Tongue. By the Rev. Canon Lysons, M.A.

P.

Paley's Evidences of Christianity.

Pentateuch, The Gospel of the. By the Very Rev. Dean Law.
4 vols.

Pentateuch. See *Colenso, Bishop*.

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Pre-Adamite Man.

Prodromus. See *Botany*.

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Daniel and St. John. By John Rees Mogg. 2 vols.

Prussia, The History of, from the time of the Knights of the
Cross and Sword to the Occupation of Hanover, 1867. By
M. A. D.

Q.

Quartz and Opal : An Elementary Treatise on. By G. W.
Traill.

R.

- Radiation, The Phenomena of, as exemplifying the Wisdom and Beneficence of God. By G. Warington.
- Regeneration viewed in Connexion with Baptism.
- Religious Subjects, Thoughts on. By a Layman.
- Rénan, M., Reply to. See *Christ of the Gospels*.
- Rolleston, Letters of Miss Frances. Edited by Caroline Dent.
- Romanism, the Novelties of, in Three Parts. I. Development of Doctrines. II. Chronological Arrangement. III. Old and New Creeds contrasted. By C. H. Collette.
- Rome, from the Fall of the Western Empire. By Rev. Canon Trevor, M.A.
- Royal Institution of Great Britain, Proceedings of the, 1851-1869. 5 vols.
- Royal Society, An Abridgment of the Philosophical Transactions of the. By Mr. Baddam. 10 vols.
- Royal Society, Proceedings of, Vol. XIX., and the current parts.
- Royal United Service Institution, Proceedings of. 1 vol. and the current parts.
- Royal University of Norway, Philosophical Transactions (in Norwegian).
- Rule of Road at Sea. By T. Gray. 3 copies.

S.

Saturday Review. 28 vols.

Scepticism, The Anatomy of: an Examination into the Causes of the Progress which Scepticism is making in England.
By R. B. Girdlestone, M.A.

Scepticism, Modern, viewed in Relation to Modern Science.
By J. R. Young.

Science and Christian Thought. By J. Duns, D.D.

Science and Religion. By Rev. W. Baker, M.A.

Science and Scripture. See *Scripture*.

Science Gossip. 1871.

Scientific Opinion. Vols. I., II., and III.

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Secularist, Anti-, Lectures. By Rev. Dr. McCann.

Sermons on Stones. By D. M'Causland, LL.D.

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Jah, the Wonderful Word. E. Poulson.

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Organology, Gall's. By T. S. Prideaux.

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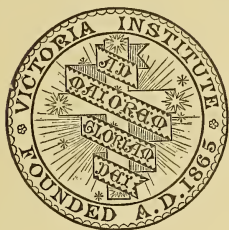
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Societies.

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 Smithsonian Institution (Washington).
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 Swedenborg Society.

APPENDIX (C).



OBJECTS,
CONSTITUTION, AND BYE-LAWS
OF
The Victoria Institute,
December 31st, 1871.

OBJECTS, CONSTITUTION, AND BYE-LAWS

OF

The Victoria Institute,

OR

Philosophical Society of Great Britain.

Adopted at the First Annual General Meeting of the Members
and Associates, held on Monday, May 27th, 1867.

(Revised at a Special General Meeting, December 4, 1871.)

§ I. *Objects.*

1. THE VICTORIA INSTITUTE, or PHILOSOPHICAL SOCIETY OF GREAT BRITAIN, is established for the purpose of promoting the following objects, viz.:—

First. To investigate fully and impartially the most important questions of Philosophy and Science, but more especially those that bear upon the great truths revealed in Holy Scripture, with the view of reconciling any apparent discrepancies between Christianity and Science.

Second. To associate together men of Science and authors who have already been engaged in such investigations, and all others who may be interested in them, in order to strengthen their efforts by association; and, by bringing together the results of such labours, after full discussion, in the printed transactions of an Institution; to give greater force and influence to proofs and arguments which might be little known, or even disregarded, if put forward merely by individuals.

- Third. To consider the mutual bearings of the various scientific conclusions arrived at in the several distinct branches into which Science is now divided, in order to get rid of contradictions and conflicting hypotheses, and thus promote the real advancement of true Science; and to examine and discuss all supposed scientific results with reference to final causes, and the more comprehensive and fundamental principles of Philosophy proper, based upon faith in the existence of one Eternal God, who, in His wisdom, created all things very good.
- Fourth. To publish Papers read before the Society in furtherance of the above objects, along with full reports of the discussions thereon, in the form of a Journal, or as the Transactions of the Institute.
- Fifth. When subjects have been fully discussed, to make the results known by means of Lectures of a more popular kind, and to publish such Lectures.
- Sixth. To publish English translations of important foreign works of real scientific and philosophical value, especially those bearing upon the relation between the Scriptures and Science; and to co-operate with other philosophical societies at home and abroad, which are now or may hereafter be formed, in the interest of Scriptural truth and of real science, and generally in furtherance of the objects of this Society.
- Seventh. To found a Library and Reading Rooms for the use of the Members and Associates of the Institute, combining the principal advantages of a literary Club.

§ II. *Constitution*

1. The Society shall consist of Members and Associates, who in future shall be elected as hereinafter set forth.
2. The government of the Society shall be vested in a

Council, to which members only shall be eligible, consisting of a President, two or more (not exceeding seven) Vice-presidents, a Treasurer, one or more Honorary Secretaries, and twelve or more (not exceeding twenty-four) Ordinary Members of Council, who shall be elected at the Annual General Meeting of the Members and Associates of the Institute. But, in the interval between two annual meetings, vacancies in the Council may be filled up by the Council from among the Members of the Society; and the Members chosen as Trustees of the funds of the Institute shall be *ex officio* Members of Council.

3. Any person desirous of becoming a Member or Associate shall make application for admission by subscribing the Form A of the Appendix, which must be signed by two Members of the Institute, or by a Member of Council, recommending the candidate for admission as a Member; or by any one Member of the Institute, for admission as an Associate.

4. Upon such application being transmitted to one of the Secretaries, the candidate for admission may be elected by the Council, and enrolled as a Member or Associate of the Victoria Institute, in such manner as the Council may deem proper; having recourse to a ballot, if thought necessary, as regards the election of Members; in which case no person shall be considered as elected unless he have three-fourths of the votes in his favour.

5. Application for admission to join the Institute being thus made by subscribing Form A, as before prescribed, such application shall be considered as *ipso facto* pledging all who are thereupon admitted as Members or Associates to observe the Rules and Bye-Laws of the Society, and as indicative of their desire and intention to further its objects and interests; and it is also to be understood that only such as are professedly Christians are entitled to become *Members*.

6. Each Member shall pay an Entrance Fee of One Guinea, and an Annual Contribution of Two Guineas. A Donation of Twenty Guineas shall constitute the donor a Life Member.

7. Each Associate shall pay an Annual Contribution of One Guinea. A donation of Ten Guineas shall constitute the donor a Life Associate.

8. The Annual Contributions shall be considered as due in advance on the 1st day of January in each year, and shall be paid within three months after that date; or, in the case of new admissions, within three months after election.

9. Any Member or Associate who contributes a donation in one sum of not less than Sixty Guineas to the funds of the Institute shall be enrolled as a Vice-Patron thereof, and will thus also become a Life Member or Life Associate, as the case may be.

10. Should any member of the Royal Family hereafter become the Patron, or a Vice-Patron, or Member of the Institute, the connection shall be regarded as purely Honorary; and none of the Rules and Bye-Laws relating to donations, annual contributions, or obligations to serve in any office of the Society, shall be considered as applicable to such personages of Royal Blood.

11. Any Member or Associate may withdraw from the Society at any time, by signifying a desire to do so by letter, addressed to one of the Secretaries, but such shall be liable for the contribution of the current year, and shall continue liable for the annual contribution, until all sums due to the Society from such Member or Associate shall have been paid, and all books or other property borrowed from the Society shall have been returned or replaced.

12. Should there appear cause, in the opinion of the Council, for the exclusion from the Society of any Member or Associate, a private intimation may be made by direction of the Council,

in order to give such Member or Associate an opportunity of withdrawing from the Society; but, if deemed necessary by the Council, a Special General Meeting of Members shall be called for the purpose of considering the propriety of expelling any such person: whereat, if eleven or more Members shall ballot, and a majority of those balloting shall vote that such person be expelled, he shall be expelled accordingly. One month's notice, at least, shall be given to the Members of any such Special General Meeting.

13. Non-resident Members and Associates, or others desirous of promoting the objects and interests of the Institute, may be elected by the Council to act as Corresponding Members abroad, or as Honorary Local Secretaries, if within the United Kingdom, under such arrangements as the Council may deem advisable.

14. The whole property and effects of the Society shall be vested in two or more Trustees, who shall be chosen at a General Meeting of the Society.

15. Both Members and Associates shall have the right to be present to state their opinion, and to vote by show of hands at all General and Ordinary Meetings of the Society; but Members only shall be entitled to vote by ballot, when a ballot is taken in order to determine any question at a General Meeting.

§ III. *Bye-Laws* (Privileges).

1. A Member or Associate, when elected, shall be so informed by the Secretary in a printed copy of the letter, Form B, in the Appendix.

2. Members and Associates shall not be entitled to any privileges, or have the right to be present, or to vote at any of the Meetings of the Society, till they have paid the contributions due by them.

3. Annual subscriptions shall be considered as in arrear, if not paid on or before 31st March in each year, or within three months after election, as the case may be.

4. Should any annual subscription remain in arrear to the 30th June, or for six months after election, the Treasurer shall cause to be forwarded to the Member or Associate from whom the subscription is due, a letter, Form C, in the Appendix, unless such Member or Associate reside out of the United Kingdom; in which case the form C shall not be sent unless the subscription continues unpaid till the 30th September.

5. If any arrears be not paid within twelve months, the Council shall use their discretion in erasing the name of the defaulter from the list of Members or Associates.

6. Members shall be entitled to introduce two Visitors at the Ordinary Meetings of the Society; and to have sent to them a copy of all the papers read before the Society, which may be printed in its Transactions or otherwise, and of all other official documents which the Council may cause to be printed for the Society; they will also be entitled to a copy of all such translations of foreign works or other books as are published under the auspices of the Society in furtherance of Object 6 (§ I.).

7. Associates may introduce one visitor at the Ordinary Meetings, and shall be entitled to all the minor publications of the Society, and to a copy of its Transactions during the period of their being Associates, but not to the translations of foreign works or other books above referred to. It shall, however, be competent to the Council of the Society, when its funds will admit of it, to issue the other publications of the Society to Associates, being ministers of religion, either gratuitously or at as small a charge as the Council may deem proper.

8. When it shall be found necessary to send the letter, Form C, to any Member or Associate who shall be in arrear,

the printed papers and other publications of the Society shall cease to be sent to such Member or Associate till the arrears are paid; and, until then, he shall not be allowed to attend any Meeting of the Society, nor have access to any public rooms which may be in its occupation.

§ IV. *Bye-Laws* (General and Ordinary Meetings).

1. A General Meeting of Members and Associates shall be held annually on May 24th (being Her Majesty's birthday, and the Society's anniversary), or on the Monday following, or on such other day as the Council may determine as most convenient, to receive the Report of the Council on the state of the Society, and to deliberate thereon; and to discuss and determine such matters as may be brought forward relative to the affairs of the Society; also, to elect the Council and Officers for the ensuing year.

2. The Council shall call a Special General Meeting of the Members and Associates, when it seems to them necessary, or when required to do so by requisition, signed by not less than ten Members and Associates, specifying the question intended to be submitted to such Meeting. Two weeks' notice must be given of any such Special General Meeting; and only the subjects of which notice has been given shall be discussed thereat.

3. The Ordinary Meetings of the Society shall usually be held on the first and third Monday evenings in each month, from November to June inclusive, or on such other evenings as the Council may determine to be convenient; and a printed card of the Meetings for each session shall be forwarded to each Member and Associate.

4. At the Ordinary Meetings the order of proceeding shall be as follows:—The President, or one of the Vice-Presidents, or a Member of the Council, shall take the chair at 8 o'clock precisely, the minutes of the last Ordinary Meeting shall be

read aloud by one of the Secretaries, and, if found correct, shall be signed by the Chairman; the presents made to the Society since their last Meeting shall be announced; the names of new Members and Associates shall be read; and any other communications which the Council think desirable shall be made to the Meeting. After which, the Paper or Papers intended for the evening's discussion shall be announced and read, and the persons present shall be invited by the Chairman to make any observations thereon which they may wish to offer.

5. The Papers read before the Society, and the discussions thereon, fully reported, shall be printed by order of the Council; or, if not, the Council shall, if they see fit, state the grounds upon which this Rule has been departed from, in the printed Journal or Transactions of the Society.

6. The Council may at their discretion authorize Papers of a general kind to be read at any of the Ordinary Meetings, either as introductory lectures upon subjects proper to be afterwards discussed, or as the results of discussions which have taken place, in furtherance of the 5th Object of the Society (§ I.).

7. With respect to Intermediate Meetings, at which the discussions are not necessarily reported, the Council, at its discretion, may request any lecturer or author of a paper to be read thereat, previously to submit an outline of the proposed method of treating his subject.

8. At the Ordinary Meetings no question relating to the Rules or General Management of the affairs of the Society shall be introduced, discussed, or determined.

§ V. *Bye-Laws* (Council Meetings).

1. The Council shall meet at least once every month from

November to June inclusive, or at any other time and on such days as they may deem expedient. The President, or any three Members of the Council, may at any time call a Special Meeting, to which the whole Council shall be summoned.

2. At Council Meetings three shall be a quorum ; the decision of the majority shall be considered as the decision of the Meeting, and the Chairman shall have a casting vote.

3. Minutes of the proceedings shall be taken by one of the Secretaries, or, in case of his absence, by some other Member present, whom the Chairman may appoint ; which minutes shall afterwards be entered in a minute-book kept for that purpose, and read at the next Meeting of the Council, when, if found correct, they shall be signed by the Chairman.

§ VI. *Bye-Laws* (Papers).

1. Papers presented to be read before the Society shall, when read, be considered as the property of the Society, unless there shall have been any previous engagement with its author to the contrary ; and the Council may cause the same to be published in any way and at any time they may think proper after having been read. If a Paper be not read, it shall be returned to the author ; and if a Paper be not published within a reasonable time after having been read, the author shall be entitled himself to publish it, and he may borrow it for that purpose.

2. When a Paper is sent to the Society for the purpose of being read, it shall be laid before the Council, who shall refer it to two of their own body, or of the other Members or Associates of the Society whom they may select, for their opinions as to the character of the Paper and its fitness or otherwise for being read before the Society, which they shall state as briefly as may be, in writing, along with the grounds of their respective opinions. Should one of such opinions be adverse to the Paper and against its being read before the Society, then it shall be referred to some other referee, who is unaware of the

opinion already pronounced upon the Paper, in order that he may state his opinion upon it in like manner. Should this opinion be adverse to the Paper, the Council shall then consult and decide whether the Paper shall be rejected or read ; and, if rejected, the Paper shall be returned to the author with an intimation of the purport of the adverse opinions which have been given with respect to it ; but the names of the referees are not to be communicated to him, unless with their consent, or by order of the Council. All such references and communications are to be regarded as confidential, except in so far as the Council may please to direct otherwise.

3. The Council may authorize Papers to be read without such previous reference for an opinion thereon ; and when a Paper has been referred, and the opinion is in favour of its being read in whole or in part, the Council shall then cause it to be placed in the List of Papers to be so read accordingly, and the author shall receive due notice of the evening fixed for its reading.

4. The authors of Papers read before the Society shall, if they desire it, be presented with twenty-five separate copies of their Paper, with the discussion thereon, or with such other number as may be determined upon by the Council.

§ VII. *Bye-Laws* (General).

1. The government of the Society and the management of its concerns are entrusted to the Council, subject to no other restrictions than are herein imposed, and to no other interference than may arise from the acts of Members in General Meeting assembled.

2. With respect to the duties of the President, Vice-Presidents, and other Officers and Members of Council, and any other matters not herein specially provided for, the Council may make such regulations and arrangements as they deem proper, and as shall appear to them most conducive to the good

government and management of the Society, and the promotion of its objects. And the Council may hire apartments, and appoint persons not being Members of the Council, nor Members or Associates of the Institute, to be salaried officers, clerks, or servants, for carrying on the necessary business of the Society; and may allow them respectively such salaries, gratuities, and privileges, as to them, the Council, may seem proper; and they may suspend any such officer, clerk, or servant from his office and duties, whenever there shall seem to them occasion; provided always, that every such appointment or suspension shall be reported by the Council to the next ensuing General Meeting of the Members, to be then confirmed or otherwise, as to such Meeting may seem good.

FORM A.

FORM OF APPLICATION for the Admission of Vice-Patrons, Members, or Associates of the VICTORIA INSTITUTE.

[Date] _____ 187 .

I hereby desire to be enrolled a * _____ of the VICTORIA INSTITUTE, OR PHILOSOPHICAL SOCIETY OF GREAT BRITAIN.

* Here insert
Vice-Patron

or

Member,

or

Life Member,

or

Associate,

or

Life Associate.

Candidate's ordinary Signature,
and full name, if necessary.

Title, Profession, University degree,
&c., or other distinction.

Address

If an Author, the name of the Can-
didate's works may be here stated.

Recommended by

To be signed by two Mem-
bers, or by an Honorary
Officer of the Institute, or
Member of Council in the
case of a Member; or by any
one Member in the case of an
Associate.

To the Honorary Officers of the VICTORIA INSTITUTE,
8, Adelphi Terrace, Strand, London, W.C.

FORM B.

SIR,

18 .

I have the pleasure to inform you, with reference to your application dated the _____, that you have duly been elected a _____ of the VICTORIA INSTITUTE, OR PHILOSOPHICAL SOCIETY OF GREAT BRITAIN.

I have the honour to be,

Sir,

Your faithful Servant,

To _____ *Hon. Sec.*

FORM C.

SIR,

18 .

I am directed by the Council of the VICTORIA INSTITUTE to remind you that the Annual Contribution due by you to the Society for the year _____ is now six months in arrear; and I have to call your attention to the Bye-Laws of the Institute, § III., pars. 4 and 8, and to request that you will be good enough to remit to me the amount due (viz. £ _____) by Post-office order, or otherwise, as early as possible.

I have the honour to be,

Sir,

Your faithful Servant,

To _____ *Treasurer.*

FORM D.

Form of Bequest.

I give and bequeath to the Trustees or Trustee for the time being of THE VICTORIA INSTITUTE, OR PHILOSOPHICAL SOCIETY OF GREAT BRITAIN, to be applied by them or him for the purposes of the said Society, the sum of £ _____, such sum to be wholly paid out of such part of my personal estate as may be lawfully applied to the purposes of charity, and in priority to all other legacies. And I declare that the receipt of the Trustees or Trustee for the time being of the said Society shall be a good discharge to my Executors for the said legacy.

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